

969

REPORT B
of
COMMITTEE ON THESIS

THE undersigned, acting as a committee of the Graduate School, have read the accompanying thesis submitted by William Wallace Butler for the degree of Master of Arts. They approve it as a thesis meeting the requirements of the Graduate School of the University of Minnesota, and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts.

John H. Gray
Chairman
Wm. Schaper
B. Jones

MUNICIPAL OWNERSHIP

IN

MINNESOTA.

A Thesis

Submitted to the Faculty of the Graduate School
of the University of Minnesota

by

W. W. Butler

In partial fulfillment of the requirements for
the degree of Master of Arts.

June, 1915.

MOM

8597

P R E F A C E.

This thesis consists first of a study of the growth, development and present extent of municipal ownership in Minnesota as compared with the growth, development, and extent of such ownership in the United States; second, of an attempt to determine the methods and means of control and organization of municipal industries, the means of financing such concerns when first launched and of liquidating bonded indebtedness, the financial success of the plants; and lastly, the cost to the community served as compared with the cost when the community or similar communities are served by private companies.

The second part of the study might be made either intensive or extensive. If the work is made intensive, it must mean that each plant taken up shall be studied in minute detail; all reports must be carefully verified

140 15 . 5570

184981

by checking over the books of the business; any condition affecting a particular plant must be given due consideration; the question of depreciation can be determined only by an expert engineer; and so an almost infinite number of details must be taken into consideration. On the other hand if the study is made extensive, a greater number of plants may be considered but in somewhat less detail. Conditions peculiar to certain plants only cannot be taken into account; data furnished by printed reports must be accepted except in so far as checking may be possible from the report itself or from additional data; the amount of depreciation must be taken as reported or allowed for according to certain general rules; the exact amount or percentage of total expense which a city should pay for its light or water can oftentimes be determined in only a very general way. The present study has been conducted in the second of the two ways and the writer has attempted to get enough dependable material from a fairly large number of plants to make possible some approximate conclusions and deductions.

The writer wishes to acknowledge his indebtedness for kindly assistance from C. W. Pfeiffer, Dr. J. H. Mitchell, Mr. G. A. Gessel, and numerous city officials. He is, however, most especially indebted to Dr. John H. Gray for numerous suggestions as to method and material and for constant guidance in the preparation of this paper.

P A R T I.

HISTORY AND EXTENT OF MUNICIPAL
OWNERSHIP IN MINNESOTA.

TABLE OF CONTENTS.

PART I.

Chapter I. Legislation and Municipal Ownership.	p.1.
A. The Attitude of the Courts Toward the Extension of Municipal Ownership.	p.1.
B. Legislation Affecting Municipal Ownership in Minnesota.	p.14.
Chapter II. Development and Extent of Municipal Ownership,	p.32.
A. Water Works,	p.32.
a. In the United States and in the Northwest,	p.33.
b. In Minnesota,	p.38.
B. Electric Plants,	p.49.
a. In the United States,	p.49.
b. In Minnesota,	p.53.
1. Previous to 1902,	p.53.
2. Development of Private and Municipal Plants since 1902,	p.55.
3. Tendency toward Changes in Ownership,	p.60.
C. Gas Plants,	p.75.
a. The Gas Industry in the United States,	p.75.
b. The Gas Industry in Minnesota,	p.79.
1. Extent and development previous to 1900,	p.79.
2. Gasoline and acetyline gas plants,	p.80.
3. The municipal gas industry in Minnesota compared with the Municipal gas industry in the United States,	p.84.
4. Output of municipal and private plants compared,	p.88.

D. Other Public Industries.	
a. Ice plants,	p. 88.
b. Public baths,	p.101.
1. In the United States,	p.101.
2. In Minnesota,	p.102.
c. Municipal Markets,	p.106.

PART II.

The Present Status of Municipal Ownership in Minnesota,	p.110.
Chapter I. Control of Municipally Owned Utilities.	
Chapter II. Methods of Financing Municipal Plants.	
A. Original Costs,	p.114.
B. Provisions for Bond Liquidation,	p.115.
C. Provisions for Extensions,	p.119.
Chapter III. The Reports of Public Utility Plants.	
A. General form of the Reports,	p.123.
B. A Model Report - Water Department of St.Paul,	p.125.
C. Combined Reports,	p.135.
Chapter IV. What the City Pays in Support of its Public Utilities.	
A. For Electricity,	p.139.
B. For Water,	p.140.
Chapter V. Are the Municipally owned Public Utility Plants of Minnesota Being Operated on a Sound Financial Basis.	
A. The Problem and Method of Analysis of Data,	p.146.

- B. Analysis of the Data contained in Chapter 15 of the Report of the Tax Commission of Minnesota for 1911, p.151.
 - a. Survey and criticism of the data, contained in the Report, p.151.
 - b. Analysis of the data arranged according to the cities in which the utilities are located, p.156.
 Class I, p.156; Class II, p.161;
 Class III, p.167; Class IV, p.170;
 Class V, p.176.

- C. Analysis of Financial Statements of Publicly Owned and Operated Utilities in Minnesota.
 Class I, p.178; Class II, p.191;
 Class III, p.196; Class IV, p.197;
 Class V, p.199; Class VI, p.199;
 Gas Plants, p.200.

Chapter VI. Rates,

- A. Electric Rates - Class II, p.211;
 Class III, p.214; Class IV, p.216;
 Class V, p.217; Class VI, p.219.

- B. Water Rates - Class II, p.221; Class III, p.223;
 Class IV, p.224; Class V, p.225; Class VI, p.226.

- C. Gas Rates, p.228.

- D. Rates to Municipalities,
 - a. Electric, p.229.
 - b. Water, p.235.

Chapter VII. Services.

- A. Electric Plants, p.239a.
 - a. Number of consumers, p.239a.
 - b. Amount of current used, p.241.
 - c. Operating periods, p.242.
 - d. Street Lighting, p.242.

- B. Water Works.
 - a. Number of consumers, p.244.
 - b. Hydrants per 100 inhabitants, p.244.

Chapter VIII. Taxes. p.246.

Chapter IX. Summary and Conclusion.

- A. Legislation, p.248.
- b. Extent of Ownership, p.248.
- c. Output of gas and electric plants, p.249.
- d. Accounting systems and reports, p.249.
- e. Finances of the Utilities, p.250.
- f. Rates, p.251.
- g. Services, p.252.

MAPS, DIAGRAMS AND TABLES.

- TABLE - A partial list of water works in the cities of Minnesota with additional information, p.46.
- MAP - The location and ownership of water works in Minnesota, p.48a.
- TABLE - A list of municipally owned electric plants in Minnesota with additional information, p.67.
- MAP - The location and ownership of Electric light plants in Minnesota, p.70.
- DIAGRAM-Municipal electric plants in the twenty leading states having the greatest number of such plants, p.71.
- DIAGRAM-Kilowatts of electricity produced by municipally owned electric plants in the twenty leading states of the United States in 1912, p.72.
- DIAGRAM-Kilowatts of electricity produced by privately owned electric plants in the twenty leading states of the United States in 1912, p.73.
- DIAGRAM-Output of electric plants in Minnesota for every fifth year since 1902, Number of electric plants for every fifth year since 1902, p.74.
- MAP - The location, ownership, and kind of gas plants in Minnesota, p.92a.
- TABLE - Tabulated data obtained chiefly from financial statements of Public Utility Plants, p.203.
- TABLE - Tabulated data concerning water plants in the cities of Minnesota and Wisconsin, p.236.
- DIAGRAM-Maximum electric lighting rates in the cities of Minnesota, p.287a

DIAGRAM - Minimum electric lighting rates in the
cities of Minnesota, p.237b.

DIAGRAM - Maximum electric power rates in the
cities of Minnesota, p.237c.

DIAGRAM - Minimum electric power rates in the
cities of Minnesota, p.237d.

DIAGRAM - Maximum electric lighting rates in
the cities of Wisconsin and Minnesota, p.237e.

CHAPTER I.

LEGISLATION AND MUNICIPAL OWNERSHIP.

A. The Attitude of the Courts toward the Extension of Municipal Ownership.

Judge Dillion says, "It is a general and undisputed proposition of law that a municipal corporation possesses and can exercise the following power and no others. First, those granted in express words; second, those necessarily or fairly implied in or incident to the powers expecially granted; third, those essential to the declared objects and purpose of the corporations not simply convenient but indispensable.....Neither the corporation nor its officers can do any act or make any contract or incur any liability not authorized thereby, or by some legislative act applicable thereto. All acts beyond the scope of the powers granted are void." ^a

^a Judge J. F. Dillion - Laws of Municipal Corporations, Fourth Edition, page 145.

Mr. Oscar L. Pond takes a somewhat different view. Probably he represents the more recent tendencies of the courts. He says, "The powers granted and the duties consequently imposed upon municipal corporations with reference to their public utilities are discretionary, and not imperative in their nature because the providing of such public utilities is a matter resting in the discretion of the municipal corporation, and unless such discretion is grossly abused, its exercise will not be interfered with by the courts. The principal of the implied powers of municipal corporations to provide themselves with municipal public utilities is generally recognized by our courts. Decisions giving the most complete freedom of activity to municipalities, consistent with their best interests and not derogatory to specific statutory regulations represent the great weight of authority."^a Again;-"The principle of the implied power of municipal corporations to provide themselves with municipal public utilities is generally recognized by our courts.-----

• Decisions giving the most complete freedom of activity to

^a Oscar L. Pond - Public Utilities, pages 15 and 16.

municipalities consistent with their best interests and not derogatory to specific statutory regulations, represent the great weight of authority.^a Mr. Pond has been criticised because of this expression as "far too liberal" in (his) view of the attitude assumed by the courts.^b Nevertheless, an examination of a number of court decisions made within the past decade or two may show somewhat at least the attitude of a few courts.

It is interesting to note that as early as 1891^c it was decided that a city had a right not only to furnish electricity for lighting its streets, but at the same time to furnish it to the inhabitants to light their residences and places of business, "by virtue of its police powers."

It has also been held that a city may provide both water works and sewer systems by virtue of its police powers. In the case of *Ellinwood vs. Reedsburgh*,^d the

a. Ibid, page 29.

b. *Political Science Quarterly*, Vol. 29, no. 1, Pp. 125 "Review" by Howard L. McBain of Columbia University.

c. *Crawfordsville V Braden*, 130 Ind. 149.

d. 91 Wisconsin 131.

court says: "It is not necessary to seek for an express delegation of powers to the city to build a water-works and electric lighting plant in order to determine whether such power exists, for the general power in respect to police regulation; the preservation of the public health, and the general welfare include the power to use the usual means in carrying out such powers, which includes municipal water and lighting service." Mr. Pond says on this point:- "The courts have not hesitated to find power by implication in the Municipality to furnish its inhabitants with electric light and other such public utilities not only on the ground of the police power,but for the reason that to do so is properly included in the general welfare clause commonly found in municipal charters or for the reason that the purpose is public or one of necessity." ^a In support of this argument he cites cases settled by the supreme courts of Colorado, Georgia, Illinois, Kansas, Massachusetts, Michigan, North Carolina, New York, Ohio, Oklahoma, Tennessee, and Wisconsin.

Regarding sewers the court in *McBean vs. Fresno*,^b

a. Oscar L. Pond - Public Utilities, Page 70.

b. 112 Colorado, 159.

says:- "Proper sewers are in this day so essential to the hygiene and sanitation of a municipality, that a court would not look to see whether a power to construct and maintain them had been granted by the charter, but rather only to see whether, by possibility, the power had been expressly denied." The same thought is expressed again in *Elinwood vs. Reedsburg*^a, where the court says:- "That it is not necessary to seek for an express delegation of power to the city to build water works or electric light plants because the police power concerning public health includes the power of establishing water and light plants."

What is perhaps more interesting is a decision concerning the right of a municipality to manufacture and distribute ice to its citizens. In the case of *Holton vs. Camilla*,^b decided in 1910, the court says in part:- "If a city has the right to furnish heat to its inhabitants, because conducive to their health, comfort, and convenience, we see no reason why they should not be permitted to furnish ice. . . . And if the furnishing of ice to its inhabitants is conducive generally to their health, comfort, and convenience, it is cer-

a. 91 Wis. 131.

b. 134 Georgia, 560.

tainly being furnished for a municipal or public purpose.

.Why then, in the exercise of its police powers may not a city guard against the impurities in the ice as well as the water used by its inhabitants." a

The rights and powers of municipalities are not, it must be said, always considered so broad and inclusive as the decisions just noted would seem to indicate. The Supreme Court of Illinois in Ladd vs. Jones,^b decided in 1895, in a case which virtually determined whether or not a municipality could furnish electricity for lighting, said:- "Powers granted to cities and villages by legislative grant must be strictly construed." This same attitude seems to have maintained in the case of Palestine vs. Siles,^c decided in 1903.

The Supreme Court of New Jersey held in Howell vs. Milville,^d in 1896, that an act "authorizing the lighting of public streets, and places in the cities, towns, . . . and villages of the state, and to erect and main-

a. The city of Camilla owns no ice plant at present.

b. 61 Illinois 584.

c. 225 Illinois 630.

d. 60 N. J. , 95.

tain proper appliances" did not give the municipality the right to build and maintain an electric light plant for lighting the streets.

Even if we accept the rather liberal interpretation of Pond as representing the general attitude of the courts we still find the cities restrained in their actions very greatly by the general legislative doctrine that they have only such powers as have been granted them by specific legislation.

This policy is in strange contrast with the policy adopted in many European countries where it is generally held that a city has any power not specifically denied it. This is especially true in Germany.^a In speaking of continental Europe, F. J. Goodnow says:- "The legislature has never attempted to enumerate the duties of the local corporations as in England and the United States. The statutes simply lay down the general principles of local administration, leaving the local corporation to carry them out in detail - - - The local municipal corporations are not, therefore, as in the United States,

a. F.J.Goodnow in Publication of American Economic Ass'n, Vol. II, p.574, and J.A.Fairlie - Municipal Administration p. 119-120.

authorities of enumerated powers, but have the right to exercise all such powers as they wish to exercise, and in the manner they see fit to adopt, provided they do not violate the spirit of the letter of the law. - - - - The French law is not nearly so specialized as in the United States and England, governing the powers of local authorities, - - - As in the French, so in the Prussian system of local government, the interference of the Central legislature in local affairs, is infinitesimal, if it exists at all.^a

The burden of deciding whether or not a city may or may not operate certain public utilities appears to be gradually taken from the courts. This has been done through revised or amended state constitutions,^b or by statutory enactment by which the cities are given the express power of owning and operating various kinds of public utilities.

The tendency in this respect is probably best shown by the statement made by the committee of twenty one of

a. F. J. Goodnow - Comparative Administrative Law, I, pp. 266 - 67, 292, 336.

b. Concerning State Constitutions see American Charters Constitutions and Organic Laws, - Compiled and Edited under an Act of Congress June 30, 1906 by Frances Newton Thorpe.

the National Civic Federation which made in 1906-7 what is doubtless the most thorough study of municipal ownership in Great Britain and the United States that has yet been undertaken. This committee made the following statement in its conclusion:- "To carry out these recommendations effectively and to protect the rights of the people, we recommend that the various states should give to their municipalities the authority, upon popular vote under reasonable regulations, to build and operate public utilities, or to build and lease the same, or to take over works already constructed. In no other way can the people be put on a fair trading basis and obtain from the individual companies such rights as they ought to have."^a Mr. Walton Clark was the only one of the committee that refused to sign the statement.

Again Carl Henry Mate, former editor of the Indianapolis Sun in a review of legislation concerning municipalities in 1913, says, "Viewed by comparison with legislation of other years, 1913 may be regarded as having been particularly fruitful in the matter of new laws extending the scope of municipal ownership."^b

a. Municipal and Private Operation of Public Utilities - National Civic Federation Report Part I, Vol. I, p.24.

b. National Municipal Review - Vol. II, Oct. 1913, p.723 - 725 "Municipal Ownership."

Mr. Pond says:- "In addition to the right now commonly belonging to the municipality to purchase and operate any municipal public utility by virtue of an express reservation in the franchise or contract of the municipality, expressly granted or necessarily implied, - - - it may generally do so by the right of eminent domain," or pursuant to statutory authority.^a He says further that where such statutory provisions are made they are "universally upheld by all our courts as constitutional."^b

The power of cities to build and operate public utility plants is often hindered by debt limitations which are fixed by statute or by constitutional provision.

Almost one-half the state constitutions^c place debt limitations upon cities, although seven^d of these constitutions provide that the city may become indebted in ex-

a. Oscar L. Pond - Public Utilities, p.573.

b. Oscar L. Pond, "Municipal Control of Public Utilities."

c. Alabama, Colorado, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Missouri, Montana, New York, North Dakota, Pennsylvania, South Carolina, South Dakota, Washington, West Virginia, Wisconsin and Wyoming.

See Thorpes Constitutions, op. cit.

"Digest of City Charters" by the Chicago Charter Convention 1905.

d. Alabama, Colorado, Montana, New York, North Dakota, Washington and Wyoming.

cess of the limit for the purpose of construction or purchase of a water plant and two^a include electric light plants also.^b

Many of the states in which the constitutions do not provide definite debt limits have laws that so provide. Minnesota comes in this group. However, since the question of interpretation of just what the law means or what constitutes the "Municipal Purpose" for which a city may become indebted or what constitutes a "Municipal Debt", lies with the court, it may be well to note the attitude of our courts concerning these questions and perhaps their attitude as expressed in their decisions toward the further extension of municipal ownership.

It is possible to mention only a few of the hundreds of cases that have been decided in even recent years, but, nevertheless, an attempt has been made to cite some of the more important.

In the case of Voss, vs. Waterloo Water Co.,^c the court held that although a city could purchase light and water, since it was a public necessity, regardless of the municipal

a. Alabama, and Washington.

b. "Digest of City Charters" by the Chicago Charter Convention 1905.

c. 163 Indiana 69.

debt limitation it could not exceed this limitation for the purpose of acquiring or erecting either a water or light plant. The court also held that "municipal corporations cannot evade restrictions upon their power to become indebted by issuing their bonds, payable only out of a fund raised by a special tax authorized, levied, and collected for that purpose.

The court in the case of Reynolds vs. Waterville,^a held that a city could not "acquire a public utility, by paying for the same in installments, when to do so would exceed the debt limit."

The Supreme Court of New York in the case of Levy vs. McClellan,^b took the stand that "certain outstanding contracts, validly entered into by the city for public improvements should be regarded as an existing indebtedness in the purview of the constitution."

As somewhat opposed to the spirit of these decisions we find the Supreme Court of Washington in the case of Winston vs. Spokane,^c declaring that a debt created by the purchase of a waterworks plant and which was to be paid out

a. 92 Main 292.

b. 196 New York 178.

c. 12 Washington 524.

of the revenue from operation did not constitute a part of the municipal debt. The Supreme Court of Kentucky in the case of Overall vs. Madisonville,^a decided in 1907, showed the same spirit by permitting the city of Madisonville to purchase an electric light plant by what amounted to a piecemeal purchase for the purpose of avoiding the constitutional debt limitation.

In the case of Christie vs. Duluth,^b the court held that the city might issue certificates of indebtedness for the creation of a permanent improvement fund, such certificate to be paid by special assessment on the property benefited, and that these certificates should not constitute a part of the city's legal debt.

The Supreme Court of Minnesota in the case of Kelley vs. Minneapolis,^c held that that city could issue parkboard bonds in excess of the debt limit if the "Certificates" of indebtedness took the land purchased as security and not the general credit of the city.^d

a. 125 Kentucky 68.

b. 82 Minnesota 202.

c. 63 Minnesota 125.

d. Decisions, in other jurisdictions, similar to the above, are:- Grant vs. City of Davenport, 36 Iowa, 396; City of Valpariso vs. Gardner, 97 Indiana 1; City of Corpus Christi vs. Woessner, 58 Texas 462; Smith vs. Dedham, 144 Mass. 177; State vs. McCauley, 15 Colorado, 530, and Capitol City Water Works Co., vs. City of Montgomery 92 Alabama, 366.

There are very few instances in which the Supreme Court of Minnesota has been called upon to decide upon any phase of municipal ownership or debt.

Now, in the light of these facts and suggestions which have been given for the purpose of showing the general attitude of courts and legislators toward municipal ownership of public utilities, the writer has attempted a discussion of legislation concerning this field in Minnesota.

B. Legislation Affecting Municipal Ownership in Minnesota.

Unlike most of the state constitutions there is no general provision whatever in the constitution of Minnesota governing municipal ownership or municipal indebtedness. The only mention of municipal indebtedness is found in an amendment to the constitution. This amendment has to do with the debt that a city may incur in support of railroads.^a Since such is the case it will be necessary to look to legislative enactments for any information on the subject of regulation of public ownership or debt limitation. Also, since there was practically no general leg-

a. Constitution of Minnesota, Article 9, Sec. 15, Amendment adopted Nov. 4, 1879,

islation concerning these issues previous to 1892, we must seek for all such legislation before that time in the special laws.^a No attempt has been made to summarize the special laws relating to the authorization of city or village bond issues for the purpose of constructing or aiding in the construction of bridges, school houses or railroads.

The earliest provision for municipal ownership of public utilities in Minnesota seems to have been made by the city of St. Paul. In 1856 this city issued a franchise to the St. Paul Gas Light Company containing the provision that the city might purchase, if it so wished, the plant at the expiration of the franchise.^b From this time down to the present the purchase clause has been a feature of many of the franchises granted to private companies.^c In many instances the provision has been made for purchase at the end of certain periods usually five or ten years rather than at the expiration of the franchise.

a. Special Legislation was prohibited in 1892 by amendment to State Constitution, See State Constitution Art. IV. sec. 33.

b. Charter and Ordinances of St. Paul 1853, p. 83. Old St. Paul Gas Light Company Franchise, Section 10.

c. Mankato, Winona, and Albert Lea are exceptions to the rule. See old charters of these cities. From an unpublished Thesis of C. W. Pfiffer on The Regulation of Public Utilities with Special Reference to Gas Companies in Minnesota.

It probably makes no difference whether or not this clause is specifically included in the franchise granted the utility company since a general law passed ⁱⁿ 1893,^a and still in force, provides that in any case of a franchise issued to any gas, electric, water, telephone, or street railway company, at the expiration of each and every five year period, the city may purchase the plant.^a

In 1870 a general law was passed empowering any city council to provide for street lighting and to regulate the laying of gas or water mains in the streets of said city.^c It is not clear from the reading of the law whether or not the right to provide for street lighting included the right to build or purchase an electric or gas plant. It would appear from future legislation that in the judgment of the legislature it did not. In 1870 Minneapolis was empowered to issue \$40,000 of bonds, for the purchase or construction of waterworks and sewers.^d

In 1873 Duluth was authorized to issue \$200,000 of bonds for funding the debt insured for harbor improvement.^e More

a. General Laws of Minnesota 1893 Chapter 74, or Revised Statutes 1913 Chapter 58.

c. General Laws 1870, Chapter 31.

d. Special Laws 1870, Chapter 1.

e. Special Laws 1873, Chapter 173.

interesting however, for our present study are the laws relating to bond issue in other cities. Mankato was empowered to issue \$60,000 of bonds for the construction of water works. These bonds were to be sold at not less than par and to draw not more than ten per cent.^a Winona was authorized at the same session of the legislature to issue \$80,000 of bonds, at any time previous to 1875, for the purpose of establishing a water works system.^b

The legislature of 1874 authorized bond issue for city halls in Minneapolis, Clear Lake and Litchfield. It also made provision whereby Duluth might establish a fire department.

The year 1874 marks the beginning of the passage of numerous special laws authorizing bond issues for the purpose of erecting city halls and creating fire departments. No further mention will be made of any such special legislation.

From 1875 to 1880 there were no laws of particular importance relating to public ownership with the exception of a law in 1875 authorizing Little Falls to issue bonds

a. Special Laws 1873, Chapter 181.

b. Special Laws, 1873, Chapter 182.

for water works,^a and a law in 1879 authorizing St. Paul to issue \$40,000 of bonds for the creation of a public market place.

The year 1881 is the most significant year thus far in the state's history, concerning the development of municipal ownership as indicated by special legislation. The legislature of this year authorized the issue of bonds for the purpose of acquiring or constructing waterworks in Crookston, Zumbrota, Winnebago, Benson, and Red Wing.^b The amounts of these issues varied from \$40,000 in Crookston to \$1,500 in Benson. The last named city was to provide fire protection only. Red Wing with a population of 5,876 was the only one of these cities having a population of over 4,000, and Benson and Zumbrota had less than 1,000.^c

The decade from 1881 to 1891 shows an ever increasing demand by the cities and villages for legislation empowering them to issue bonds not only for water works but for electric light plants as well. No city in the state had either purchased or constructed a gas plant prior to 1898.

a. Special Laws 1879, Chapter 175. The charters of most of the early cities provided for establishing public markets by the city but made no provision for raising money for this purpose.

b. Special Laws 1881, Chapters 79, 80, 235, and 264.

c. Census of United States, 1880.

During this decade the following cities were authorized to issue bonds for one or both of the purposes given above: St. Paul, Browns Valley, Montevideo, Glenwood, Red Wing, Pipestone, St. Peter, Stillwater, Waseca, Albert Lea, Worthington, Winona, Wabasha, Austin, and Ortonville.^a In addition to bond issues for the construction of waterworks and light plants, there were numerous issues authorized for the purpose of establishing sewers, hospitals, markets, and parks.

The most important legislation, however, during the period was the passage of certain general laws. The legislature of 1885 provided that any village might establish and maintain fire departments, waterworks, sewers, markets, and public libraries.^b The clause concerning water departments was evidently interpreted by the legislature to refer to city fire protection only since the law was amended and added to in 1891 so that any village might "dispose of and for any purpose and in any manner all surplus light, heat, steam, water, or electricity which may be produced."^c The same legislature also passed an act giv-

a. Special Laws 1883, Chapters 103, 96, 97, 118, 125, 126, 124 and 133.

b. General Laws 1885 Chapter 145.

c. General Laws 1891, Chapter 149, Sec. 1.

ing villages of over 3,000 inhabitants the right to provide for gas works, electric light works, water works, and markets, and to control electric plants and street railways.^a It was further provided that the tax levy in such villages for any or all of these purposes should not exceed one per cent of the assessed valuation but that the village might issue general funding bonds to the extent of two-and-one-half per cent of the assessed valuation.

The year 1892 practically marks the end of special legislation since the constitution was amended in this year so as to prohibit special legislation wherever general legislation could be made to serve the desired ends.^b This was really an amendment to an amendment adopted in 1881. The amendment of 1881, however, was very general and did not in any way affect municipal ownership or debt limitation. It should be mentioned that although special legislation is prohibited in form yet under the recognized device of classifying cities the major portion of legislation in regard to cities in this and other states is

a. General Laws of 1891, Chapter 146.

b. Amendment to Constitution of Minnesota adopted in 1892.

special.^a

The year 1893 shows a very decided move toward increasing the debt limit of municipalities. First, under "An Act to provide for the bonding of villages", every village in the state was given the power to issue bonds for the purpose of raising money for any lawful public improvement to the extent of ten per cent of the assessed valuation.^b Such bond issues were to be made only after an election at which a majority of the voters declared themselves in favor of the issue. Second, under "An Act to grant additional powers to the cities of the State of Minnesota and to empower

a. The cities of Minnesota are divided into 4 classes according to population as follows: "Those over 50000 inhabitants, those between fifty and twenty thousand, those not less than ten thousand and those less than 10,000." Villages are also classified according to population. In addition to these classifications cities are further classified according to their charters, those having and those not having home rule charters. Legislation affecting cities of the first class not operating under home rule charters refers to Minneapolis while that affecting cities of the first class operating under home rule charters refers to St. Paul and Duluth. For Classification of cities and villages see "The Government of Minnesota" pp. 75 and 78, by Frank L. McVey.

b. General Laws of 1893, Chapter 200.

such cities to issue their bonds for certain purposes," every city in the state was authorized to issue bonds "for the purpose of constructing, erecting, improving, or purchasing water works, gas-works, electric light plants, or other works for the use and benefit of the inhabitants of this state".^a The debt limit was placed at five per cent of the assessed valuation, but this might be increased by an extra five per cent in the case of the purchase or construction of water works.^a The city council was empowered to issue by a three-fourths vote, bonds for the purposes above named and to the limits given. If the council refused to do this the people by a two-thirds vote could have the issue made and the plant bought or constructed.^b

From 1893 to 1903 but two laws of any particular interest were passed. The first in 1897 amended section one of chapter 204 of the general laws of 1893 referred to above. The amended law gave the cities authority to issue bonds for the purpose of constructing, erecting, improving, or purchasing water-works, gas-works, electric light plants, city hospitals, street railways, telegraph, telephone or

a. General Laws of 1893, Chapter 204.

b. General Laws of 1893, Chapter 270.

"any other communicating lines of any description." ^a

In 1898 an amendment to the constitution was adopted which provided that "any city or village, ~~of not less than 1,000 inhabitants,~~ in this state may frame a charter for its own government as a city."^b The legislature of 1899 provided that the debt limit, under certain restrictions, of Cities operating under Home Rule Charters should be five per cent of the assessed valuation but that Cities may issue bonds in excess of this amount for the purpose of acquiring water or light plants or both, such bonds to be a first lien upon the property acquired.^c

In 1903 a law was passed authorizing any village to erect water works, and lighting plants for supplying water and light for public use and for the use of the inhabitants of the village.^d This law seems to be for the purpose of including all classes under one law since similar privileges had been granted before this under separate laws.

a. General Laws of 1897, Chapter 270.

b. Art. 4, Sec. 36, Constitution of Minnesota.

c. General Laws, 1899, Ch. 351, Sec. 10, This law was amended by Ch. 238, Sec. 9, of Laws of 1903, See page 29.

d. General Laws of 1903, Chapter 29.

Thus we see that by 1903 any village or city in the state might legally and without legislative oversight own and operate its own water works, light plant or gas plant, not only for municipal purposes but for supplying its inhabitants as well. The only check upon the cities in this field was the very elastic debt limit. The cities were given further power in 1905 by an act authorizing cities of less than 2,500 population, in addition to all other rights, privileges or limitations the power to issue bonds to the extent of \$50,000 for the purpose of acquiring water and electric light plants.^a

In 1907 "An act to authorize cities to acquire, construct, own, operate, and lease public utilities, and to provide the means therefor" made the regulations concerning municipal ownership clear and explicit. This act consolidated and added to the previous legislation. Section one reads: "For the purpose of this act public utilities shall include street railways, telephones, water works, gas works, and electric light, heat, and power plants." The law authorizes any city in the state to own, construct, or operate any public utility within its corporate limits

a. General Laws of 1905. Chapter 28.

and to lease the same for a period not exceeding twenty years. Such procedure must, however, be sanctioned by three-fifths of those voting at an election when the question is voted on. The law further provides that any city may, in lieu of bonds, issue "interest bearing certificates, to be known as "telephone certificates", 'water certificates', 'electric light certificates', or 'gas works certificates' as the case may be". If these be made payable out of the revenue of the plants and the plants mortgaged for the sum of the bonds, the indebtedness thus incurred is not to be counted as a part of the total legal debt of the city. Provisions are to be made concerning rates and services in case of foreclosure by the party holding the bonds. His term of ownership of the plant is also limited and at the expiration of this period, the property reverts to the city.^a The law further provides that any city operating a public utility plant shall keep the financial accounts of such plant separate and distinct from the other financial accounts of the city. The annual statement which the city shall publish must show the actual financial condition of the plant and actual cost to the city including "all cost of maintenance, extension and

a. General Laws of 1907, Chapter 452.

improvement, all operating expenses of every description, in case of such city operation; the amount set aside for sinking fund purposes."

In 1909 the legislature provided that any city of over 50,000 inhabitants and not operating under a home rule charter and any city having a population of less than 10,000 should make rates for public utility services sufficient to pay the interest on outstanding bonds, "maintain the plant in perfect condition, and operate the same at a high standard of efficiency.^a These last provisions are practically dead letters. This is because many of the cities never publish printed reports of their plants and the rates appear to be made, at times, without any regard to the conditions named above.

In addition to the general and widely inclusive law of 1907, the legislature of that year passed numerous laws relating to certain classes or sub-classes of cities. This is especially true of cities of the first class. This kind of legislation is in evidence in the law authorizing cities having a population of over 50,000 to issue, "in addition to all rights and powers" before granted them,

a. General Laws 1909, C-272.

\$2,000,000 for the purchase of gas works,^a \$500,000 for sewers,^b \$1,000,000 for streets leading to the State Capitol.^c The same kind of legislation has been continued by the legislature of 1909, 1911, and 1913. These laws permitting bond issues for certain purposes are always framed so as to read: "In addition to all the other powers now possessed by such cities" or "regardless of other indebtedness or limitations".^d

We may now summarize the legislation existing in 1913.

Summary of laws in force in 1913.

1. Any city in the state may own, construct, acquire, purchase, or maintain and operate any public utility within its corporate limits.^e

2. Any village in the state may construct, acquire, purchase, or maintain and operate "a water, light and heating plant, or water or light or heating plant".^f

a. General Laws 1907, Chap. 376. This law was passed to enable the city of Minneapolis to issue bonds for the purchase of the gas plant of the Consumers Gas Light & Power Company of Minneapolis.

b. General Laws 1907, Chapter 52.

c. General Laws, 1907, Chapter 271.

d. See laws referred to.

e. Revised Laws, 1913, paragraph 1376.

f. General Laws of 1913, paragraph 1307.

3. No city or village may acquire and operate any public utility plant without the approval of a popular vote at a general or special election.^a

4. Any city may lease any one of its public utilities for a maximum period of twenty years at a minimum rental equal to the interest on the outstanding bonds.^b

5. Any city of over 50,000 not operating under home rule charters and any other city of not over 10,000 population operating a public utility plant, shall be required to establish and collect rates for service sufficient to pay the interest upon (outstanding).....bonds, maintain the plant in a perfect condition, and to operate the same at a high standard of efficiency.^c

6. Every city owning or operating any public utility shall keep the accounts of such plant separate and distinct from the other accounts of the city and in such a manner as to show the actual cost of operating the plant. The council of said city shall publish an annual report of the financial condition of the plant.^d

a. General Laws of 1913, paragraph 1308 and 1376.

b. General Laws of 1913, paragraph 1376.

c. General Laws of 1913, paragraph 1389.

d. General Laws of 1913, paragraph 1378.

7. Subject to certain charter provisions, no city of the first class may incur a debt in excess of five per cent of its assessed valuation, nor shall any other municipality except school districts become indebted in excess of ten per cent of its assessed valuation.^a

8. Cities or villages operating under Home Rule Charters may not become indebted in excess of 10 per cent, 5 per cent in cities of the 1st class, of the assessed valuation but such cities may issue certificates of indebtedness in excess of this amount for the purpose of acquiring water or light plants.^b

9. Any city may for the purpose of acquiring any public utility plant issue certificate of indebtedness against such plant and such indebtedness shall not be counted as a part of the city's debt.^c

10. Any city may for the purpose of extending or improving its water works ^{may} issue bonds to the extent of \$150,000 in addition to all other indebtedness of the city.^d

11. Cities organized under special laws and having a population of not less than 5,000 may by a three-fifths

- a. General Laws, 1913, paragraph 1051.
- b. General Laws, 1913, paragraph 1348.
- c. General Laws of 1913, paragraph 1377.
- d. General Laws of 1913, paragraph 1096.

vote of the electors voting on the proposition, issue bonds to the extent of ten per cent of the assessed valuation of the city for constructing or purchasing water-works.^a

12. Any city having a population of not less than 10,000 or more than 20,000 may issue bonds to the extent of five per cent of the city's assessed valuation in addition to all other debt, for the purpose of acquiring or constructing water works.^b

13. Any city of 10,000 inhabitants or less may issue bonds for the purpose of purchasing, erecting, or improving water and light or water or light plants, to the extent of fifteen per cent of the assessed value of the taxable property of the city.^c

14. Cities having a population of over 50,000 may issue bonds for the construction or purchase of an ice plant to the extent of \$250,000 without regard to any debt limitations.^d

15. Any city having a population of not less than

- a. General Laws, 1913, paragraph 1376.
- b. General Laws, 1913, paragraph 1671.
- c. General Laws, 1913, paragraph 1763.
- d. General Laws, 1913, paragraph 1608.

10,000 or more than 20,000 may issue bonds for the purpose of maintaining and establishing bath houses. ^a

16. No bond issued by any municipality shall pay interest at a higher annual rate than six per cent and such bonds may not be sold below par. Bonds of the first, second, and third class cities, must be payable not more than thirty years after date of issue, and the bonds of all other municipal corporations in not more than twenty years after date. ^b

17. Any city having a population of over 50,000 may issue bonds bearing interest at the rate of not more than four-and-one-half per cent per annum. Such bonds shall not be sold for less than par and accrued interest. ^c

From this review it is evident that it is within the power of any city in the state to own and operate practically any public utility. The only limitation is the power to raise money and this is practically limited only by its ability to sell bonds bearing a certain rate of interest at par. Where the debt limitation is restrictive it may be avoided by the issue of certificates of indebtedness.

a. General Laws of 1913, paragraph 1640.

b. General Laws of 1913, paragraph 1852.

c. General Laws of 1913, paragraph 1859.

Chapter II.

Development and Extent of Municipal Ownership.

In taking up this division of the subject a short review of the growth and extent of municipal ownership in the United States makes possible comparisons that will show the increase and present extent of municipal ownership in Minnesota as compared with the country as a whole and with certain states in particular.

Most of the general information for this chapter has been gathered from the United States Census reports, Brown's Directory of American Gas Companies, McGraw's Electrical Directory, M.N.Baker's Manual of American Water Works, and the Municipal Journal for the past twenty years.

The information concerning water works is very meager; no complete data having been collected since 1897. The Municipal Journal has, however, been collecting and publishing much information for the past two years but has as

yet reported on only about twelve hundred plants. The different utilities will be considered separately.

A. Water Works.

(a) In the United States and in the Northwest

The earliest public utility in this country was the water works. Even the establishment of this very necessary utility is of comparatively recent origin.

At the beginning of the Nineteenth Century there were only sixteen water works in the United States although there were 5,305,925 inhabitants at that time.^a Of these sixteen plants, one was municipally owned. This plant was established by the City of Winchester, Virginia, in 1800. Of the fifteen private plants fourteen have since become owned and operated by the municipalities. The only one remaining in private hands is at Morristown, N.J.^b

Mr. M.N. Baker states that of the 3196 plants operating in 1897, two thousand and eighty or 84.5 per cent had been built as recently as 1880 and "1,400 in the last six years."^c From this it will be seen that the increase in

- a. Seventh Census of the United States - Statistics of Progress, page IX.
- b. E.W.Bemis in Municipal and Private Operation of Public Utilities. National Civic Federation Report for 1907, Part I. Vol. I. page 127.
- c. M.N.Baker - Manual of American Water Works 1897, page E.

the period from 1891 to 1897 - years of financial unrest in this country - was greater by three-fold than the total number, 496, of plants established in the United States previous to 1880. Further, the number of plants in 1880 was only a little more than fifteen per cent of the number in 1897.

There is probably no single factor so pertinent a representative of the progress of science, and the general progress made by the people of this country as this phenomenal increase in the number of water works. This rapid growth of water works cannot, be attributed directly to invention except perhaps as invention affected the general growth of cities, as can the great increase in the other two utilities considered, but was the result of education, and sanitary science combined with the general prosperity of the period and the rapid growth of the urban centers.

Of the 3196 plants in 1897 sixteen hundred ninety or over fifty per cent were publicly owned.

Although the trend toward municipal ownership of this utility appears to be fairly constant, when the last half century is considered, it is interesting to note that there have been very decided waves of alternating increase and decrease in the ratio of the municipally owned water works to the total number.

In 1875 fifty-four per cent of the water works were owned by municipalities. At this time, due in part no doubt to the general development of the period, there seems to have spread over the country a wave of confidence in the security of principal and stability of income of money invested in water works and the sudden increase during the next decade and a half was due largely to private initiative. This was carried to such an extent that by 1892 the privately owned plants comprised 57.1 per cent of the total number^a as compared with forty-six per cent seventeen years earlier.

Since this year the number of publicly owned plants has been increasing very rapidly both absolutely and relatively.

Although there are no statistics of the total number of water works in the United States later than 1897 the information that has been gathered by the Municipal Journal is interesting and valuable. This journal has published three lists of plants containing statistics for 400 plants, June 30th, 1912; 272 plants, June 12, 1913; and 550 plants, May 7th, 1914. The percentage of publicly owned plants

a. M.N.Baker - Manual of American Water Works, page H..

in each of the three cases respectively is 75.5, 83, and 81.1 per cent. The average is a little over eighty per cent.

The Journal in commenting upon this data says, "While it is not probable that these figures correctly represent the actual ratio between private and municipal plants the country over, it is indicative of the undoubted fact that the number of municipal plants greatly exceeds that of the private."

This percentage while possibly a little high for the number of plants, is below the true figure if our calculation should be made on the amount of water furnished. This is true because of the fact that far more than eighty per cent of the large cities of the country are supplied by public plants. The journal states that according to the data from 400 water works eighty-six per cent of the cities of over 30,000 inhabitants have municipally owned plants and the percentage is much higher for the large cities.^a

Mr. E. W. Bemis shows that of the 38 cities having over 100,000 inhabitants in 1907, only eight; viz, San Francisco, New Orleans, Omaha, Indianapolis, St. Joseph, Scranton, Patterson, and New Haven were supplied by pri-

a. Municipal Journal, June 12, 1912.

vate companies.^a Since 1907 the plants in Omaha and New Orleans have been acquired by the cities.

Mr. Baker shows further that there were in the north-western group of states^b, 515 water works in 1897 of which number 387 were publicly owned, 125 privately owned, and the ownership of three unknown.^c The ratio of municipal to private plants was much greater for this section than for the country as a whole.

If we may take the increase in the relative number of municipal plants in the states of Wisconsin and Minnesota since 1897 as indicative of the increase for the whole section, it becomes evident that the percentage of municipal plants to the whole number far exceeds that which we obtained from the Municipal Journal.^d In 1897 62 or 63.9 per cent of the 92 water works in Wisconsin were publicly owned,^e and in 1912 of a total of 159 plants, 132 or eighty-three per cent were publicly owned.^f

a. Bemis - Civic Federation Report , Part I. Vol I. p.127.

b. Iowa, Minnesota, Kansas, Nebraska, South Dakota, North Dakota, Wyoming, and Montana.

c. Manual of American Water Works, page F.

d. The McGraws Electrical Company has (Feb 1914) begun a very extensive survey of all the water works in the country. This should make available within a year or two some very valuable material.

e. M.N. Baker, Manual of American Water Works.

f. Report of Wisconsin Railroad Commission on "Water Works" for 1912.

In 1897 Minnesota had ninety-two water works, eleven of which were privately owned. The percentage, 87.1, of municipal plants in Minnesota at that time was exceeded by Nebraska only with 87.9 per cent of its water works publicly owned. At present the number of water works in Minnesota is about 200, of which only eight are privately owned. Not one of these eight plants is located in a city having a population of over 10,000 in 1910.^a Since the change from private to municipal ownership of the water works in Omaha, Nebraska, no city of any considerable size in this section of the country has a privately owned water plant.

The development of water works in Minnesota will now be studied in more detail.

(b) In Minnesota.

Prior to 1870 there were apparently but two cities^b having either public or private water plants. This is more significant when we consider that the state had at this time a population of 439,706. There were also four cities^c

a. Rochester, 7844; Little Falls, 6078; Brainerd, 8526; Cloquet 7031; Fergus Falls, 6887; Crookston, 7559; Coleraine, 1613; and Proctor, 2243.

b. St. Paul and Minneapolis.

c. Minneapolis, St. Paul, Winona, and St. Anthony, -See Census Report, 1870, Population & Social Statistics, pp178, 180, 182, and 178.

having a population of 5,000 or over, eleven having 3,000 or over and 16 having 1,000 or over.^a

The St. Paul water plant was built by the St. Paul Water Company in 1856 and the Minneapolis plant by the city in 1866-67, a decade after the St. Paul plant was built.

There appears to have been built but one other plant prior to 1880. This was the municipal plant in Winona which was finished in 1876.

This period is not quite so barren of progress along this line as it may seem from the number of works established. Four cities, Red Wing, Mankato, Winona, and Little Falls obtained permission from the legislature to issue bonds to be used in the construction of water works.

Mankato was the only one to do any building prior to 1880 and it provided a system for fire protection only. The other three built in the early eighties.

The building of water works seems to have been begun in earnest about 1880. During the decade from 1880 to 1890 twenty-four plants were constructed. Of the twenty-seven plants operating before 1890 seven were privately

a. United States Census 1870. Population & Social Statistics, pp. 176 O 182.

owned. The seven privately owned plants at that time have, with but one exception, Rochester, been acquired by the cities in which they are located.

The franchise granted to the private company in Rochester in 1887 expires in 1917.^a Most of the franchises granted during this decade were for twenty, twenty-five or thirty years. Apparently no franchise has been granted for longer than thirty years. This has not been true of the other utilities and especially of the gas franchises. Mankato and Albert Lea each granted gas companies perpetual franchises and Minneapolis, Red Wing, Faribault, and Stillwater each granted gas franchises for 40 years.^b

In spite of the fact that a considerable number of plants was built in the period from 1880 to 1890, the great growth took place in the early nineties. During the first four years of the decade from 1890 to 1900, twenty-nine plants were established. With but one exception these were built by municipalities.^c The one private plant was established in Virginia in 1892-1893 and at the expiration of the franchise in 1913 this plant was taken

- a. See Charter of City of Rochester.
- b. C. W. Pfeiffer's Theses, op. cit. p.138-139.
- c. For this data see answers to questionnaire and the Manual of American Water Works.

over by the city.^a The greatest growth for any equal period of time in the state's history took place in 1894 1895 and 1896. There were established during these years, respectively, sixteen, twenty-six, and eight plants. Of the fifty plants but two were privately owned.^b

Just why there should be such an enormous increase in the construction of water works during these years is somewhat a matter of speculation. The increase is not peculiar to Minnesota, although more intense here, because we have seen that the total increase in the six years for the whole country was 1,400,^c an average of 233 per annum. Of the causes suggested for the general increase the most pertinent in the Northwest, and especially Minnesota, was the rapid development during the period and the great movement from the rural to urban districts.

There were probably three reasons why municipal ownership should increase so much more rapidly than private ownership during this period. First, people were becoming aware of the great importance of a water supply and were beginning to be very careful about granting long term or exclusive franchises, often preferring to undertake the

- a. See Charter of Verginia and answers to letter of inquiry.
- b. Mountain Iron and Little Falls, both established in 1894.
- c. See page.33:..

work rather than to grant the privilege to a private company. Second, during a good part of this period money was hard to get and those who had it were probably more willing to put it into municipal bonds than into public works directly. Third, the passage of certain general laws, referred to above.

During the years from 1897 to 1900 there appear to have been about twenty five water works established.^a If this be correct there were then in 1900 about 131 water works in Minnesota. Thus at the beginning of the Twentieth Century only one hundred years from the time when there were but sixteen plants in the whole country, there were in Minnesota alone 131 plants—and of these practically ninety per cent were publicly owned.

Since 1900 the number of plants has increased much less rapidly than during the preceding decade. However, in view of the fact that the twenty-nine cities having populations of 3,000 or over were with but one exception, Hastings, supplied with water works in 1900, the increase in number of plants was necessarily been confined almost entirely to the smaller cities and villages of the state.^b

Page 117,

- a. Answers to questionnaire and Municipal Yearbook of 1902.
- b. See questionnaire and Municipal Yearbook. Hastings established a water plant in 1907.

Of the ~~twenty~~-eight plants just referred to, nine were privately owned in 1900.^a This statement needs a little explanation to show its true significance. Of these nine privately owned plants only one was built as late as 1890, i.e., before the spirit of municipal ownership in the decade from 1890 to 1900 became so strong. Since 1900 six of these plants have become publicly owned.

There are now in Minnesota about 208 water works. About 40 of these are located in villages of less than 500 population. Concerning these no definite information has been obtained. A small number of the plants of the state furnish fire protection only.

There are at present but eight privately owned plants^b and but three of these^c are located in cities having a population of over 3,000 and no one in a city having a population of 10,000 or over.

Although all of the cities of 3,000 or over are now supplied with water works, there are still about ~~twenty-seven~~ cities having a population of 1,000 or over with no water works.

- a. They were Anoka, Brainerd, Cloquet, Fergus Falls, Little Falls, Rochester, St. Cloud, Stillwater, and Crookston.
- b. Rochester, Little Falls, Sandstone, Cass Lake, Crookston, Coleraine, Proctor, International Falls (Municipal distributing system)
- c. Crookston, Rochester, and Little Falls.

The time is probably not far distant when any village in the state having a population of 500 or over will be considered behind the times and unprogressive unless its inhabitants are furnished with a plentiful supply of pure water. This it is believed can be done in most instances at a very small cost to the consumers. This statement is based upon reports of small plants operating in this and other states.

Partial list of Water Works in the cities
of Minnesota with additional information.

C I T Y	Population	Acquired	Cost	Bonds.
Ada	1432	1900	40,000	9,000
Adrian	1112	1893	38,000	
Aitkin	1638	1892		
Albany	1902	1902	7,000	1,500
Alexandria	3001		102,289a	60,000a
Allen		1901	4,000	
Anoka	3972	1890	46,000a	
Appleton	1221	1900	25,000a	
Atwater-	600		8,000	
Bandette	897		8,000	8,000
Barnesville	1353		30,000b	30,000b
Belgrade	448	1899	11,500	6,000
Bemidji	5099	1900	60,000	60,000
Benson	1677	1908	15,000	11,000
Blue Earth	2319	1895	55,000	35,000
Brainerd	8526	1883		51,500
Breckenridge	1840	1894	66,725	42,798
Bovey	1377	1906		
Caladonia	1372	1903	25,000a	9,000a
Canby	1528	1900		None
Cannon Falls	1385	1887		10,000
Chaska	2050	1900		
Chatfield	1228	1889	2,000	500
Cloquet		1907	90,000	58,000
Delno	1000	1894	12,000a	
Clara City		1911	11,250	11,250
Chisholm	7684	1902		
Clarkfield	603	1904	5,000	5,000
Crookston-	7559	1885	175,000a	
Detroit	2807	1903	94,515	38,000
Duluth	78466	1898		
E. G. Forks	2533	1909	67,042a	50,000a
Elbow Lake	776	1898	4,000	1,000
Elgin		1895		
Ellsworth	536	1905	7,000	7,000
Elmore	795	1898	5,000	5,000
Eveleth	7036	1906	50,000	40,000
Eyota	423	1906	10,000	1,000
Fairmont	2958	1894	20,000	14,000

a. Value or bonded indebtedness of both water and light plant

b. Water, light and telephone.

Partial list of Water Works in the cities
of Minnesota with additional information.

Cont:-

C I T Y	Population	Acquired	Cost	Bonds.
Fertile	614	1898	12,000	7,000
Fosston	1075	1908	30,000	23,000
Glencoe	1788	1897	25,000	25,000
Glenwood	2161	1881		15,000
Hardivick-	292	1913		
Hastings	3983	1907	50,000	50,000
Hawley	800	1910		
Hayfield		1897	5,000	None
Henderson	753	1897	7,000a	5,000a
Hibbing	9832	1900		None
Howard Lake	623	1895	7,000	7,000
Janesville	1173	1908	12,000	12,000
Kenyon	1237	1894	6,000	6,000
Kelliker	294	1906	5,000	None
Lake City	3142	1895	90,000a	
Lakefield	924	1900	25,000a	8,000a
Le Suer	1755	1896	20,000	20,000
Litchfield	2333	1890	54,800a	10,500a
Long Prairie	1250	1895	10,000	10,000
Lyle	552	1895	8,000	None
Madison	1811	1914	40,109a	25,000a
Mahnomen	796	1906	7,000	7,000
Marshall	2152	1894	48,056a	25,000a
Marble	887	1910		97,000
Maynard		1904	8,500	8,500
McIntosh	634	1912	3,100	3,100
Melrose	2591	1906	47,736a	22,400a
Montgomery	1267	1904		
Monticello		1902	10,000	10,000
Moorhead	4840	1895	186,300	40,000
Mt. Iron	1343	1910	50,000a	50,000a
Minneapolis	301408	1866		
Nashwauk	2080	1910	12,500a	
New Prague	1554			
New Ulm	5648	1902	29,100a	30,000a
Olivia	960	1900	27,000a	
Ortonville	1744	1898	40,000a	40,000a
Paynesville	901	1898	12,000a	12,000
Piery	545	1900	55,000	None

- a. Value or bonded indebtedness of both water and light plant.
b. Water, light and telephone.

Partial list of Water Works in the cities
of Minnesota with additional information.

Conc:-

C I T Y	Population	Acquired	Cost	Bonds.
Pine City	1258	1913	20,000	20,000
Preston	1193	1896	30,548	7,000
Princeton	1555	1890	35,000a	
Red Lake Falls	1666-			25,000
St. Peter	4176		74,000a	47,000a
Staples ²	2558	1907	77,500a	66,000a
Starbuck	497	1898	9,000a	3,000a
Thief River Falls	3714	1901		67,500a
Two Harbors	4990	1899	113,193a	54,000a
Virginia	10473	1913	634,685	430,000
Wadena	1820	1889	40,000a	
Warren	1613	1902	48,000a	14,000a
Waseca	3054	1894	65,000a	30,000a
Wells	1735	1885	25,000a	
West Mpls	3022	1901	15,000	2,000
White Bear	1505	1905	21,000	19,000
Willmar	4135	1892	170,456a	33,000a
Worthington	2358	1890	19,400	

- a. Value or bonded indebtedness of both water and light plant.
- b. Water, light and telephone.

B. Electric Plants.

(a) In the United States:

The story of the growth and development of this industry reads more like a tale from The Arabian Knights than a statement of facts based on statistics. Scarcely a generation ago the world was almost unconscious of the wonderful power and utility of the electric current. Today its uses are known and its benefits enjoyed in almost every city of the country.

Even so late as 1880 there were but eight central power stations in the United States.^a Seven of the eight had been established by private enterprise and one by the city in which it was located.^b

By 1885 the total number of plants had grown to 167 an increase of over twenty fold in five years. The private plants at this time numbered 151 and the municipal plants sixteen. About this time electricity began to be very much in demand for both street lighting and domestic use. The lights then used, although far inferior to present

- a. United States Census 1902. Special Report on Central Lighting Stations Table 2 page 7.
- b. The city in which this plant was located is not known to the author.

day lights, both incandescent and arc, were great innovations as compared with lighting methods before this time.

Those who had been fortunate enough to furnish gas as a dominant at from \$1.75 to \$2.25 per thousand cubic feet^a began to realize that one of two things must happen and happen soon; either they must reduce the price of gas, make it give more service per dollar's worth or go out of the business. They had no intention of doing the latter and the invention of the Welsbach mantle and discoveries in the methods of generating gas as well as reductions in the cost of pipe aided them in serving the public at materially reduced rates.

The reduction of gas rates does not appear, however, to have had much effect on the development of the electrical industry as the number of plants continued to increase by leaps and bounds. The increase is evidenced by the fact that there were thirty plants established in 1882 and 227 in 1891.^b During this period each year saw a larger number of new plants established than the preceding year. After 1891, however, there was more or less fluctuation

a. See Article on The Gas Industry by E.W.Bemis in the Publications of the American Economic Ass'n for 1891, p.357.

b. United States Census for 1902. Special Report on Central Electric Lighting Stations, p.7.

in the number of plants established annually up to 1902 after which time the census report does not give the number of plants established yearly.

The smallest number of plants established in any one year in this country between 1892 and 1902 was 191, in 1894. The largest number for any one year was 277 in 1897.^a The number of plants established between 1881 and 1892 was 1207 an average of about 110 yearly. For the period from 1892 to 1902 the total number was 2393. There were in 1902, 815 municipally owned plants, or 22.5 per cent of the total.

The greatest number of publicly owned plants built in any one year was eighty-two. This was in 1897 and was about thirty per cent of all the plants built in that year.

The real development of this industry can best be shown by a comparison of the output for different years. The total output increased from 2,507,051,115 kilowatts in 1902 to 5,862,276,737, in 1907 and 11,532,963,006 in 1912. The number of plants from 2,805 in 1902 to 3452 in 1907, and 5374 in 1912. The municipal plants comprised 29.1 per cent, 36.3 per cent and 29 per cent of the total number for each of the three years respectively. The

a. United States Census of 1902 - Special Report on Central Electric Lighting Stations, page 7.

output of the municipal plants for each of these three years was 7.84 per cent, 4.93 per cent and 4.64 per cent of the total output. It is evident from the data just given that the output of municipal plants although increasing absolutely, is decreasing relative to the total output. This is doubtless due to the fact that most of the larger cities are supplied by private companies. In fact of the seventy-five plants having a capacity of 5,000 kilowatts at the station in 1907, only one was municipally owned.^a

However, while only thirty-three stations reporting as publicly owned in 1902 were privately owned in 1907, 133 privately owned plants in 1902 had changed to municipal ownership in 1907.^a From 1907-1912, 106 privately owned plants changed to municipal ownership and 80 municipally owned plants to private ownership.^b The census report for 1907 states that the small city and village seems to be a "distinct field for municipal electric stations". This it claims is true partly because of a feeling that such utilities should not be privately owned and more especially because many small places that can afford plants do not

a. United States Census of Central Electric Light and Power Stations for 1907, page 28, table 14.

b. United States Census of Central Electric Light & Power Stations for 1912, page 10.

offer sufficient inducement for the investment of commercial capital.

The great majority of lighting plants established since 1902 are located in small cities and villages. In fact there were but forty-nine cities having a population of 3,000 or over that were not supplied with electric plants in 1902.^a

The total number of plants, as given above on January 1, 1913, was 5,374. Of these twenty-nine per cent were municipally owned. McGraw's directory is somewhat at variance with this report. It gives a total of 5,641 of which 25.2 per cent were municipally owned.

(b) In Minnesota:

(1) 1. Previous to 1902.

The United States census report on Electric Lighting Plants for 1902 states that the first electric plant in Minnesota began operations in 1881.^b The first electric plant so far as the writer has been able to learn began operations in St. Paul in 1882.^c The first publicly owned plant appears to have been established by the city of Brain-

a. M.H. Baker - Municipal Yearbook for 1902, page 13 of the introduction.

b. The location of this plant is not known to the writer.

c. The City of St. Paul, published by Pioneer Press in 1897, page 56, article on St. Paul Gas Light Co.

erd about 1883, at which time there were three private plants in operation in the state. There are three dates for the establishment of the plant in Brainerd. Mr. E.W. Bemis in his Municipal Monopolies page 203 states that the plant was established in 1887. The Census gives 1885 as the date for the establishment of the first municipal plant in the state and The City Clerk in answer to this question gave the date as 1883.

The number of plants increased steadily from 1881 to 1890; the greatest number of new plants started in any one year being five in 1889; This same year saw the erection of eight water works, also the greatest number for any one year up to that time. By 1891 twenty-three plants had begun operations and of these, six were publicly owned.

As in the case of water plants the decade from 1890 to 1900 shows a most rapid increase in the number of electric plants corresponding in general with the increase in the number of water works. The total number of stations in 1900 was 125, of which sixty-two were privately and sixty-three municipally owned. It is rather curious that of the

twenty-four electric plants established in 1894 and 1895, sixteen were municipal. Many of the cities put in both the water and light plant at the same time.^a It will be recalled that there were forty-two water works established in these two years.

2. Development of Private and Municipal Plants since 1902:

In 1902 which is the first year for which statistics are available concerning equipment, output, and the like, there were 138 plants of which seventy were municipally owned.

The number of municipal plants as before indicated cannot be used as a measure of the relative importance of municipal ownership.

The cost of construction and equipment for all plants operating in Minnesota in 1902 was \$9,236,505; the gross income \$1,858,789; and the output in kilowatt hours 40,258,632.^b The public plants at this time controlled about twenty-five per cent of the electrical industry of the state. The gross income of the public plants amounted to twenty-two per cent, and the output in kilowatt hours

a. Answers to questionnaire.

b. United States Census, 1902, Central Lighting Stations, p.110.

to 27.75 per cent of the total. It will be remembered that the municipal plants for the whole country produced only about seven per cent of the total output in 1902.

The total income from all plants in 1907 was \$3,478,009 as compared with \$1,858,789 in 1902. During the same period the number of plants had increased from 138 to 171. Of the 171 plants seventy-nine were private. The total output showed even a greater increase, reaching 87,579,431 kilowatts in 1907, an increase of over 117 per cent.

Of the total output the municipally owned plants generated about fifteen per cent. This it will be noticed is three times the average percentage for the whole country, but still only two-thirds of what it was in 1902, as compared with the total.

Although practically every phase of the industry showed an increase of not less than forty per cent during this period, the greatest increase appears to have been in the amount of current generated by water power. This grew from 6,040 horse power in 1902 to 71,656 in 1907, an increase of 1086.3 per cent. This was also equal to 58.8 per cent of the total horse power developed.

Of the total, 121,825 horse power produced, 85.8 per

cent was produced by private plants. However, of the 71,656 horse power produced by water power, 70,160 or 97.9 per cent was produced by privately owned plants.^a It is very evident that private enterprise has realized the great wealth stored up in the water power of the state and has, so far as appears at present, picked the fattest plums.

There is yet much to be done in developing the water-power of the state. It has been estimated that only one-half of the water power sites in the state had been developed in 1912.

The total income from all the plants in the state in 1912 was \$6,937,841 an increase of nearly 100 per cent, since 1902, or 273.2 per cent since 1902.^b During these same periods the total wages and salaries rose from \$1,459,874 in 1902 to \$2,983,277 in 1907 and \$5,580,525 in 1912, an increase of 282.3 per cent in the decade.^c

One noticeable thing about the development of this period is that the amount of current generated by water-power increased only twelve per cent in the five years.

- a. United States Census, 1907, Special Reports - Central Light and Power Stations.
- b. Advance sheets of Census Report for 1912.
- c. Taken from the Census Reports of 1902-07 and 1912.

This would seem to indicate that most of the readily usable water power was secured in the previous five years. This, as before suggested, does not mean that there is not yet abundant water power to be developed, but it probably does mean that many of the sites now remaining necessitate carrying the current generated a considerable distance before much of it can be used.

The increase in the output measured in kilowatt hours was 112.5 per cent for the five years or 362.1 per cent for the decade. However, while the output of the municipal plants in Minnesota was 27.75 per cent of the total in 1902 and fifteen per cent in 1907 it was only eight per cent in 1912. The output of all the municipal plants in the country for 1912 was 537,526,730 kilowatts or 4.64 per cent of the total output. In spite of the great increase in the past few years it is possible that the increase especially in privately owned plants will be even more rapid in the next decade. The census shows that fourteen states are producing more current than is Minnesota and that at least seventeen states produced twice as much or more in 1912 as in 1907. The states

showing the greatest increase are Wisconsin, Arizona and Idaho. Idaho showed an increase of about eleven fold.

The number of kilowatts produced by municipal plants in the last year in this state is increasing even more rapidly than that produced by private plants, although it is much less for the five years from 1907 to 1912.^a This is due, I believe, to the change from private to municipal ownership of some of the larger plants. The largest city now operating its own electric light plant is Virginia.. This plant was taken over by the city in October, 1913 and this alone increased the total output of the municipal plants by some 1,500,000 kilowatts annually.

So long, however, as the cities of ten thousand population and over are furnished current by privately owned plants, the great increase in the amount of current produced will come from these plants. This is true because after a plant gets well established its increased output must come in the way of current for power or heat and only in exceptional cases will the smaller cities make a very great demand for current for these purposes.

a. According to the Information received by the Municipal Reference Bureau of the University of Minnesota.

The total number of plants on January 1, 1913 was according to the census 195,^a of which ninety-one were privately owned and 104 municipally owned. This does not agree with McGraw's Directory which gives 190 plants of which one-half are municipal. By checking these two reports with my returns and those of the municipal Reference Bureau, it seems that the government report is more nearly correct. This, however, seems to be a little short of the actual number which appears to be about 203.

Of the 167 plants listed in the Municipal Reference Bureau report, eighty-six are privately owned. At least one new municipal plant has been built since January 1, 1914, and two privately owned plants have been taken over by the cities in which they are located.^b

3. Tendency toward changes in ownership.

This discussion would hardly be complete without a paragraph concerning the tendency toward a change from private to municipal ownership or the opposite, and also a paragraph that will give the reader a clearer idea of the number of people who actually enjoy the benefit of

a. United States Census of ~~1913~~ Central Electric Light & Power Station for 1907, page 28, table 14.

b. The new plant is in Hardwick and other two mentioned are in Ellsworth and Virginia.

electricity for lighting, whether furnished by the municipality or a private company.

Although there does not appear to be nearly so much discontent with the companies furnishing electricity as with those furnishing gas, it is nevertheless apparently true that there is a rather general impression that the electric companies are making more than a fair profit and that the city could furnish the electricity for less money. It is also believed that several cities operating their own plants are making a good profit, while furnishing current at a low rate.

Before 1906 eleven plants located in the following cities: Alexandria, Argyle, Austin, Blue Earth, Brainerd, Hibbing, Kasson, Long Prairie, New Prague, Tower, and Wadena, had changed from private to municipal ownership.

Four of these cities have populations of over 3,000 and three of the four have over 5,000 inhabitants. Since 1906 the following plants have changed from private to municipal ownership:- Ellsworth, Virginia, Anoka, Dawson, Lanesboro, Sherburne, and Staples.

A number of small cities and villages buy their current from a private company and resell it through their own distributing system. The largest city doing this

is Fergus Falls. The dam used by the municipal plant in that city was washed out about four years ago and since that time the city has been buying current from the Otter-tail Power Company. This company also furnishes current to Breckenridge, Foxhome, and Morris. By far the largest and most powerful company operating in the state is the Consumers Power Company with its central office in Chicago. This company either sells to or has sub-stations in twenty-nine cities and villages of the state including Minneapolis, St. Paul, Mankato, Stillwater, Faribault, and Northfield. The Central Minnesota Power Company with headquarters at Glencoe supplied Glencoe, Cokato, Dassel, and Delano. There are a number of other companies which have plants in two or three cities or villages.

It is likely that many of the smaller cities now operating their own plants will find it possible to make satisfactory contracts with these large companies, and buy their current from them. The private companies of the state where they can generate current very cheaply by using water power are carrying this current for miles around and some of the small municipalities have already found it more profitable to buy this current than to generate it.

At the present time a very small number of cities of 500 population or over own the distribution system only.^a This situation is interesting as compared with the situation in California according to a bulletin published by the City Club of Berkeley. The bulletin states that "Power Stations are operated by Alameda, Polo Alto, Pasadena, and Anohean. Healdsburg obtains a part of its current from a small Water Power Plant. The other cities (nine in number) purchase electricity from public utility corporations, but own the distributing system and retail the current to the consumers and light the streets.It seems advisable for the smaller cities to own and operate the distributing system for Electric Service and to purchase the current rather than build separate power stations."^b

No city or village in Minnesota having a population of 3,000 or over is without an electric light plant. But what is still more significant is the fact that of the 143 cities and villages having a population of 1,000 or over, only seven are without electric lights.^c

f. Berkeley Civil Bulletin - Municipal Lighting - Published by the City Club of Berkeley, Mar. 20, 1914, p.161 and 163.

a. These are Brainerd, Fairfax, Marble, Fergus Falls and Kasota (Kasota buys current from the St. Peter Municipal plant).

c. These are Edina, Browns Valley, North Mankato, Richfield, St. Louis Park, Waterville, and West St. Paul. West St. Paul has a municipally owned gas plant.

The remaining sixty or seventy plants are with a few exceptions located in villages having populations of from 500 to 1,000. There are a few villages of not more than three hundred that have electric lights.^a All the municipal plants in cities or villages of 500 or over furnish current to the inhabitants, as well as for municipal purposes.^b

Not many new plants, wither public or private are likely to be established within the next few years. It is not unlikely, however, that there will be a number of changes in ownership; the private to municipal and municipal in some instances to private. In many places franchises granted for twenty or twenty-five years will expire before 1920 and there is no doubt but that some of these cities will take over the plants instead of renewing the franchise.

Apparently it is but a question of a few months until municipal ownership of electric plants gains a foothold in the cities of the first class. The following quotation is taken from the report of the Water and Light Department of Duluth for 1913: "Under an ordinance of the Common Coun-

a. Foxhome (Ottertail Power Co. from Fergus Falls), Hardwick (Municipal), Heidberg, Kelliher (Municipal), Mazeppa, (Municipal).

b. The plant in Henning apparently furnished current for street lighting only.

cil an appropriation of \$7,000 from the Public Utilities Fund was made in September for the purpose of making a valuation of the Duluth Edison Electric Company's plant, with the end in view of negotiating the purchase of the plant as an additional utility to be operated in conjunction with the gas and water plants." Mr. D. A. Reed in a letter dated October 28, 1914 says, "In relation to municipal ownership, will say that the common council has ordered the construction of the first unit, probably eight in all of the municipal electric lighting plants. Plans are now being prepared for the construction work, which will be started as soon as the ordinance appropriating \$85,800 for this purpose has been approved by the people."

. The total cost will apparently be about \$700,000. The city will compete with the Edison Electric Company of West Duluth. This company sold about 13,000,000 kilowatts in 1914 or seven per cent of the state's output. St. Paul and Minneapolis used seventy-seven per cent of the state's output. The municipal plant when completed will obtain power from the Great Northern Power Company.

The change from municipal to private ownership will as before suggested be due largely to the fact that large

central plants may find it possible to carry current to surrounding smaller cities at less cost than the city can generate it. On the other hand changes from private to municipal ownership will take place because of a desire on the part of the city to lower rates or improve the services. The distribution of the electric light plants is shown on pages 67 to 70



A List of Municipally Owned Electric Plants in Minnesota
with additional information.

C I T Y	Population	Date of Acquisition	Cost	Bonds.
Ada	1432	1900		None.
Adrian	1112	1893	38,000a	
Aitkin	1638	1900		
Albany	657	1910	7,000	7,000
Alexandria	3001	1909	40,000	
Allen	18	1901		
Anoka	3972	1890	46,000a	
Appleton	1221	1900	25,000a	
Argyle	744	1902	17,150	12,000
Arlington	733	1894	9,500	None.
Aurora	1919		25,000	10,000
Austin	6960	1900	60,000	
Bagley	801	1904	13,000	
Barnesville	1353		30,000b	30,000
Bandette	897		12,000	12,000
Belgrade	448	1899	11,500a	6,000a
Benson	1677	1908	36,000a	
Biwabik	1690		14,000	5,000
Blue Earth	2319	1895	55,000a	35,000a
Brainerd	8526	1883		35,000
Breckenridge	1840	1894		13,500
Buffalo	1227		18,000	
Buhl	1005	1903		
Caledonia	1372	1903	25,000a	9,000
Chaska	2050	1900	16,000	4,200
Dawson	1318	1898	28,000	20,000
Detroit-	2807	1903	100,000a	54,000a
E.G.Forks	2533	1902		
Elbow Lake	776	1900	9,500	
Ely	3572	1904	35,000	
Ellsworth	536	1913	8,000	8,000
Eyota	423	1908		
Fairmont	2958	1905		41,000
Fergus Falls	6887		60,000	17,000
Fosston	1075	1908	30,000a	30,000a
Gaylor	610		9,000	
Graceville	987	1897	20,000	10,000
Grand Rapids	2230	1903	37,000	25,000
Granite Falls	1454	1891	50,000	33,000

a. Value of bonded indebtedness of both water and light plants.

b. Water, Light and Telephone.

A List of Municipally Owned Electric Plants in Minnesota
with additional information.

Cont:-

C I T Y	Population	Date of Acquisition	Cost	Bonds.
Hardwick	292	1913	3,000	
Hawley	800	1910	8,000	
Hibbing	8832	1900	60,000	None
Howard Lake	626	1896	7,000 ^a	7,000 ^a
Jackson	1907	1900	12,500	10,000
Kasson	932	1900	17,000	
Kelliher	294	1906	10,000 ^a	
Lake City	3142	1895	90,000 ^a	
Lakefield	924	1900	25,000 ^a	8,000 ^a
Lanesboro	987		15,000	6,000
Le Seuer	1755	1896		20,000 ^a
Litchfield	2333	1890	45,000	9,000
Long Prairie	1250	1894	10,000	
Luverne	2540	1892	60,000 ^a	10,000 ^a
Madison	1811		16,000	
Mahomen	796	1907	6,000	6,000
Marshall	2152	1894	50,000	
Maynard		1911	4,500	4,500
Melrose	2591	1906	47,736 ^a	22,400 ^a
Moorhead	4840	1895		
Mt. Iron	1243	1910	50,000 ^a	50,000 ^a
Nashwauk	2080		12,500	
New Prague	1554			
New Ulm	5648	1902	70,000 ^a	20,000 ^a
Olivia	960	1900	27,000	
Ortonville	1774	1898	40,000 ^a	40,000 ^a
Paynesville	901	1898		12,000
Pelican Rapids	1029	1903	15,000	15,000
Perkan	1376	1898	20,000	None.
Piery	545	1912	6,000	5,000
Preston	1193	1896	30,548 ^a	7,000 ^a
Princeton	1555	1900	35,000	
Rochester	7844	1892	80,000	
Rushford	1011	1902	9,000	4,000
St. Charles	1159		10,000	10,000
St. James	2102	1894	35,000	30,000
St. Peter	4176		50,000	7,000
Shakopee	2302		18,000	
Sherburn	814	1902		
Sleepy Eye	2247		15,000	

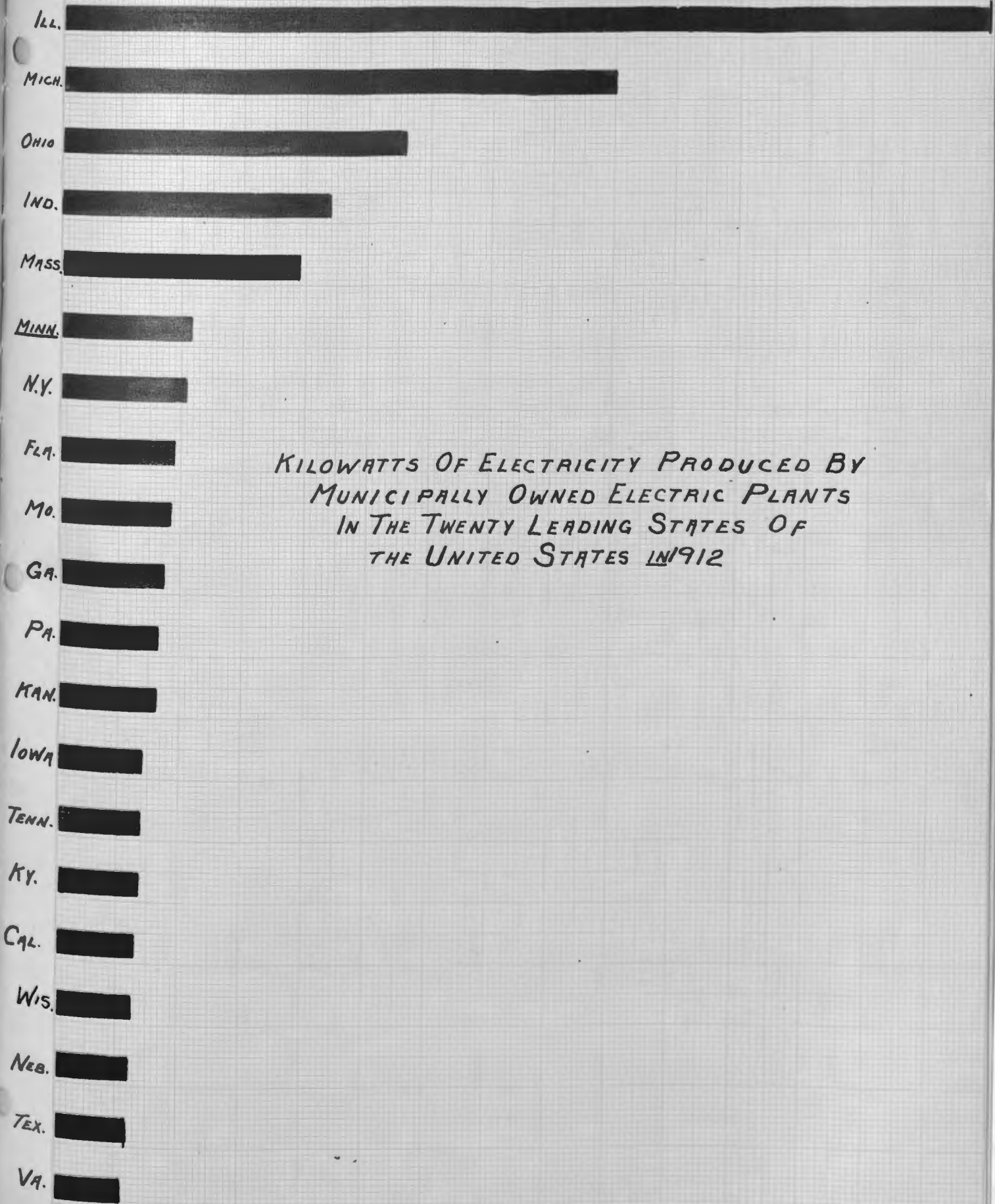
a. Value of bonded indebtedness of both water and light plants.

A List of Municipally Owned Electric Plants in Minnesota
with additional information

Conc:-

C I T Y	Population	Date of Acquisition	Cost	Bonds.
So. Stillwater	1343	1904	165,000	15,000
Springfield	1482	1894	20,000	
Staples	2558	1907	77,500a	70,000
Starbuck	497	1898	9,000a	3,000a
Stephen	618-	1900	9,000	
Theif River Falls	3714	1901		67,500a
Tower	1111		26,000	18,000
Tracy	1876	1892	14,000	12,000
Two Harbors	4990	1889		54,000a
Tyler	614		13,000	8,000
Virginia	10473	1913	450,000a	430,000a
Wadena	1820	1889	40,000a	
Walker	917	1898	7,000	
Warren	1613	1902	48,200	14,000
Waseca	3054	1894	65,000	30,000
Wells	1755	1885	25,000a	
Willmar	4135	1892	70,000a	
Windom	1749	1895		
Winthrop	1043	1897	18,000	7,000
Worthington	2385	1895	45,000a	

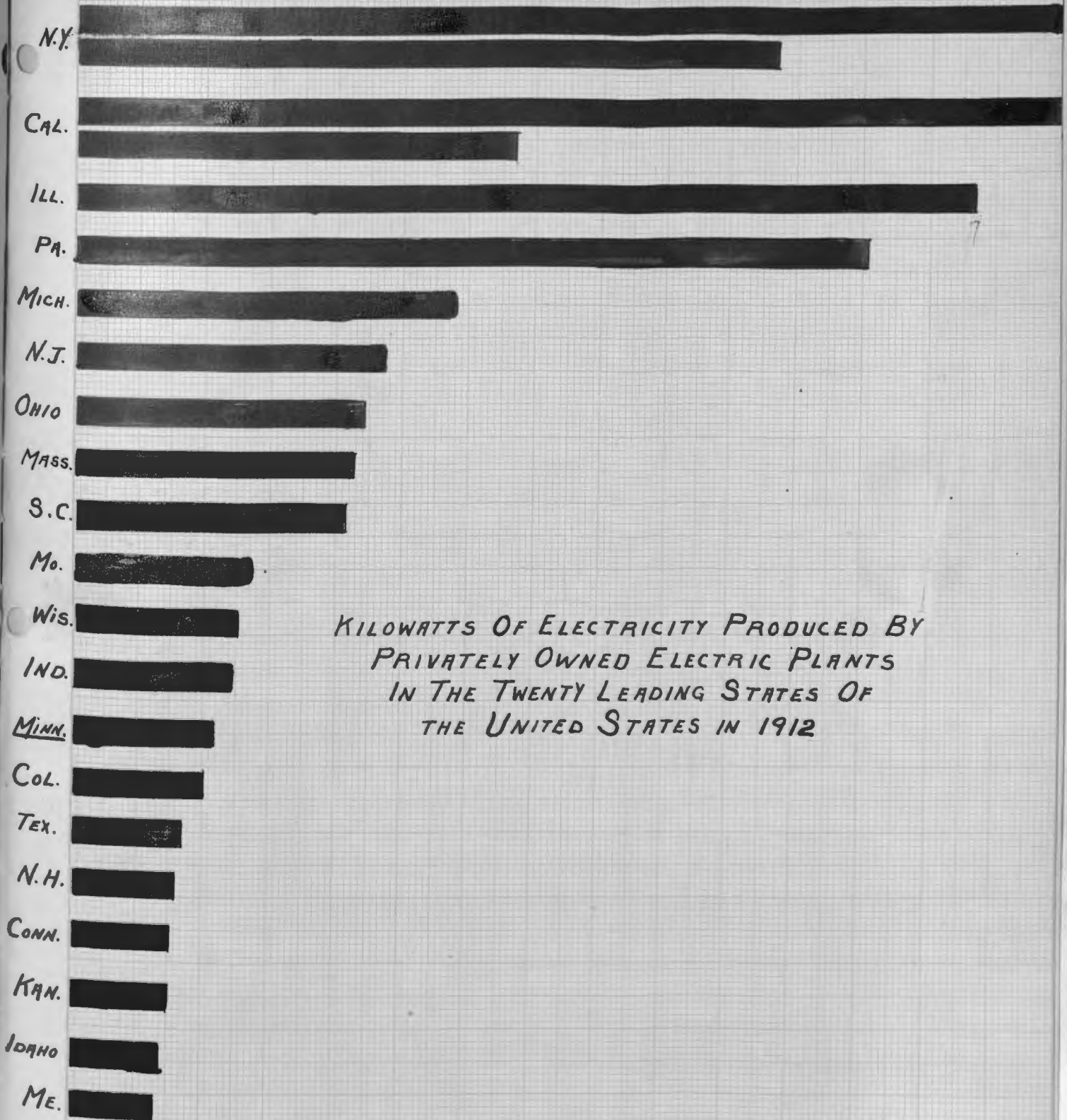
a. Value of bonded indebtedness of both water and light plants.



KILOWATTS OF ELECTRICITY PRODUCED BY
MUNICIPALLY OWNED ELECTRIC PLANTS
IN THE TWENTY LEADING STATES OF
THE UNITED STATES IN 1912

1 7 14 21 28 35 42 49 56 63 70 77 84 91 98 100

KILOWATTS EXPRESSED IN MILLIONS



*KILOWATTS OF ELECTRICITY PRODUCED BY
PRIVATELY OWNED ELECTRIC PLANTS
IN THE TWENTY LEADING STATES OF
THE UNITED STATES IN 1912*

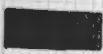
1 30 160 240 320 400 480 560 640 720 800 880 960 1040 1120 12
KILOWATTS EXPRESSED IN TEN MILLIONS

OUTPUT OF ELECTRIC PLANTS IN MINNESOTA FOR EVERY FIFTH YEAR SINCE 1902

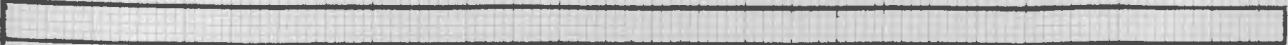
1902



1907



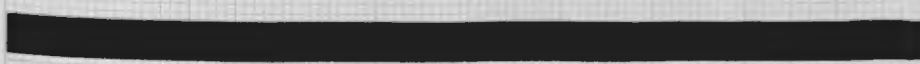
1912



1 6 12 18 24 30 36 42 48 54 60 66 72 78 84 90 96 102 108 114 120 126 132 138 144 150 156 162 168 174 180

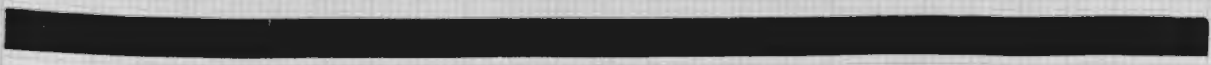
OUTPUT IN MILLIONS OF KILOWATTS

1902

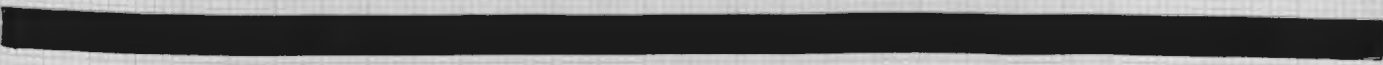
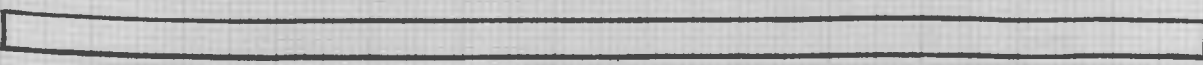


NUMBER OF ELECTRIC PLANTS FOR EVERY FIFTH YEAR SINCE 1902

1907



1912



LEGEND
■ MUNICIPAL PLANTS
□ PRIVATE PLANTS

1 7 14 21 28 35 42 49 56 63 70 77 84 91 99 106

NUMBER OF PLANTS

C. Gas Plants.

(a) The Gas Industry in the United States:-

The first gas plant in the United States was established in Baltimore, Maryland in 1816^a, over a half century before electricity made its appearance in a commercial way.

Very little progress was made in the gas industry for about thirty years after this time. There were probably two main causes of the slowness with which the industry developed. In the first place it was necessary to educate the people to a knowledge of this form of lighting. This was the work of a generation.

The second retarding influence was the high cost of the gas. Even so late as 1857 the St. Paul Gas Light Company was charging seven dollars per thousand cubic feet.^b Gas at this price could be little more than a luxury for private consumption. However, for the whole country the decade from 1850 to 1860 shows a most phenomenal increase in the development of the gas industry. The percentage of increase was greater for this decade than for any other in the country's history. During these ten

a. E.B. Smith - Municipal Gas Lighting Legislative Bulletin, No. 5, Wisconsin University.

b. City of St. Paul published by the Pioneer Press 1897, page 57.

years the number of gas plants increased at the rate of 19.1 per year making a total of 221 in 1860 as compared with thirty in 1850.^a This increase was great not only relatively but absolutely being a little greater than the yearly average for the half century following 1860. Of the 221 plants only two were municipally owned. By 1870 the total number of plants had increased to 390. At this time there were but four municipal plants. Since 1870 the increase has been fairly steady, reaching a total of 1,296^c in 1909, and 1,423 in 1913.^b The number of gas plants increased very rapidly during the first six or eight years of this century but this increase, which was due to the large number of gasoline and acetyline plants established during these years, had spent itself by 1909. Although the number of plants increased but three fold from 1870 to 1909, the capital or apparent capital invested increased from \$71,773,694 (in 1869) to \$915,536,732 or over twelve fold. During the same time the output had increased nine fold.

The great increase in the capital invested and out-

- a. Twelfth Census of the United States. Vol. 10 page 175.
- c. Browns Directory for 1913.
- b. United States Census - The Manufacture of gas in 1909.

put as compared with the increase in the number of plants is due, to the fact that most of the gas plants are located in large and rapidly developing cities.^a In 1904 only nineteen per cent of the plants were located in cities of less than 5,000. This percentage had increased in 1909 to 37.5 per cent. This large increase is again due to the great number of gasoline and acetyline gas plants established during these five years. Nearly all of these ~~plants~~ were located in small cities or villages.

The acquisition of gas plants by municipalities either by construction or purchase has taken place very slowly as compared with the acquisition of water and electric plants. In deed, in 1900, of the 877 plants in the United States only fifteen were publicly owned. This ^{is} practically the same per cent of the total as for 1860.^b The percentage of municipal plants had increased in 1906 to three and in 1909 to 9.18 per cent of the total number. The increase is not of much commercial consequence since it was due to the plants established in small cities and villages.

It is interesting to note the condition in England

a. United States Census 1909 - The Manufacture of Gas.
b. Twelfth Census of United States, Vol. 10, page 705.

in this respect. Mr. Milo Maltbie writing in 1906 says "Half a century ago municipal water works were quite common but there were few public gas works...." He then goes on to show that there has been a great increase in the public ownership of gas plants. Of 752 plants in Great Britain 270, or about 36 per cent, were municipally owned. What is even more striking is the fact that slightly more than 36 per cent of the gas was sold by municipal plants.^a

It is very doubtful if the amount of gas produced by municipal plants in the last few years has increased so rapidly as that produced by private plants. Instead, relatively to the total, it has probably actually decreased due to the enormous increase in the output of the larger works, which, with but few exceptions, are privately owned.^b This increase is largely due to the constantly growing demand for gas for cooking purposes and also power. The increase in the amount of gas produced in the larger cities from 1902 to 1912 is in some instances as high as 400 per cent. The output in Minneapolis increased 295 per

a. Milo Maltbie in Civic Fed. Report, op. cit. Part II, Vol. I. p.
b. Only two cities, Holyoke, Mass; and Richmond, Virginia, of over 50,000 population have municipal plants. Duluth with a municipal distribution system has a population of 85,000.

cent, in St. Paul 141 per cent, and in Duluth 441 per cent.^a

(b) The Gas Industry in Minnesota.

1. Extent and Development previous to 1900:

The gas industry in Minnesota had its beginning in St. Paul in 1857 when the St. Paul Gas Company began operations under a franchise from that city.^b The industry grew slowly but steadily and by 1887 all of the ten leading cities^c of the state were supplied with gas.

Unlike either the water works or the electric works the number of gas producing establishments grew very slowly from 1887 until 1900. In fact but two new plants were established during this time. One of these was built in Rochester in 1892 and the other in Fergus Falls in 1893. The Fergus Falls plant apparently proved unsuccessful since it ceased operations in 1899.^d The chief reason why the gas industry spread so slowly to other cities was probably the high initial cost of the works and piping.

Another notable feature of this utility as compared with

a. Browns Directory for 1902 and 1912.

b. Franchise of the old St. Paul Gas Company.

c. Minneapolis, St. Paul, Duluth, St. Cloud, Mankato, Red Wing, Fergus Falls, Faribault, Stillwater, and Winona. See Brown's Directory for 1887.

d. Brown Directory for 1899.

the other two is that, with the exception of Duluth, no city had either built or purchased a gas works prior to 1900. The city of Duluth undertook the manufacture of gas in 1898 but after a short time made arrangements with the Zenith Furnace Company, a coke manufacturing concern, for purchasing gas from that company. The city continues to have full charge of the sale and distribution of the gas to private consumers. The gas street light, however, are furnished and maintained by the Welsbach Company of America and the Zenith Furnace Company furnishes the gas.^a

2. Gasoline and Acetyline Gas Plants:

About the year 1900 acetyline and gasoline gas began to be used for lighting purposes.^b Since these plants can be installed for a relatively small sum and the gas furnished (at that time at least) at a reasonable cost the number of plants grew very rapidly for a few years, but a decided reaction seems to have taken place about 1909.

In order that the early enthusiasm and later disfavor may be understood it may not be amiss to describe briefly the nature of the production of each of these gases.

a. Information furnished by D. A. Reed, M'g'r., of Water & Light Department.

b. The Municipal Journal and Engineer for April 1908 says there were in this country four acetyline plants in 1898, eight in 1899, and sixteen in 1900.

The gasoline lighting system consists of a tank partially filled with gasoline into which is pumped air until a certain pressure is obtained. The vaporized gasoline and air is then heated by applying a flame to the pipe leading from the tank and the gas is ready for use. This system may be used for a single house or for a good sized village. The chief objection to the gas seems to be that the burners clog up quite easily and more or less discomfort and inconvenience is experienced. In addition to this the increased cost of gasoline in the last few years has made its use for this purpose almost prohibitive.

Acetyline gas is a compound of hydrogen and carbon ($C_2 H_2$). It is formed by placing the calcium carbide and water together and introducing a certain proportion of air. The gas may be stored in holders or liquified under a low pressure. The liquified form is very subject to explosion and hence dangerous. Its liquidation has been prohibited in Great Britain.^a Concerning its good qualities the Municipal Journal and Engineer says, "It is universally acknowledged to be the cheapest, safest, **stadiest**, coolest, and in short the best illuminant known."^b

- a. Encyclopedia Britianica - 11th Ed. Vol. I p.137, Article on Acetyline.
- b. Municipal Journal and Engineer April 1905.

Again in an article by Mr. J.D.Bowles we find the following:
"Contrary to the general consensus of opinion, which seems to prevail, Acetyline is not a dangerous luminant."^a

Although acetyline is safe enough when properly handled it becomes dangerous when handled in a careless manner.^b For example, the admission of two mach air into the gas makes it a very dangerous explosive.

The large number of serious explosions and fires caused by this gas in this and other states, is perhaps the chief cause of its failing popularity.

Only about two years ago a plant on a farm, a short distance from Rochester, Minnesota, blew up, killing a child and seriously injuring other occupants of the building.^c Such accidents as this, even though caused by the most inexcusable carelessness will keep many from attempting its use.

Another objection to the use of this gas is that when improperly made it has a very disagreeable odor. It is odorless when pure.

a. Acetyline for Lighting Country Homes" - Bulletin of the University of Missouri, 1910.

b. Information received from the Department of Electrical Engineering, University of Minnesota.

c. The story of this accident was told to the writer by S.A.Patchen of Rochester Minn., Graduate Student in the University of Minnesota.

The earliest statistics obtainable of these plants for the whole country are furnished by Brown's Directory for 1902. There were at this time thirty-nine gasoline and twenty-five acetyline plants. Of the thirty-nine gasoline plants four were in Minnesota. Two of these were municipally owned.^a There appear to have been no acetyline plants in the state in 1902. The article quoted from on page eighty-one seems to imply that there was one such plant in operation prior to 1902, but it does not give the exact date or name of the city owning the plant. The description corresponds to Heron Lake at that time.

The four years from 1902 to 1906 show the greatest increase in the number of gas plants of any similar period in the state's history. In addition to the plants operating in 1902 there were in 1906 seven coal and water gas plants, five acetyline and nineteen gasoline gas plants.^b Of these plants three of the coal and water gas, two of the acetyline, and eleven of the gasoline plants were municipally owned. During this period one acetyline and

a. Municipally owned: Heron Lake and Mountain Lake. Privately owned: Amboy and Madelia.

b. For cities in which these plants were located see table....
page.....

and two gasoline plants that had formerly been operated by private companies were taken over by the municipalities.

3. The Municipal Gas Industry in Minnesota Compared with the Municipal Gas Industry in the United States.

A comparison of the number of municipal gas plants in Minnesota with those in other states shows that in 1906 but two states, Massachusetts and Virginia, exceeded Minnesota in the number of such plants manufacturing gas from coal. Each of the two states named had five plants while Minnesota had four.^a

It is significant that but one municipal plant was located in a city larger than Duluth^b and that the output for Duluth was exceeded by but two other municipal works.^c

Only two municipal plants in the country were selling gas at less than one dollar. One of these was the plant in Hamilton, Ohio, which sold gas at eighty cents. The other, located at West Point and operated by the United States Government, sold gas at seventy-five cents. The people in Duluth were paying one dollar at this time.

a. E. B. Smith - Municipal Gas Plants - Legislative Bulletin No. 5, University of Wisconsin.

b. Richmond has 90,000 inhabitants.

c. The plants in Richmond, Va. and Holyoke, Mass.

All of the fifty-six municipally owned gasoline plants were located in six states: viz., Illinois, Iowa, Minnesota, Nebraska, North Dakota, and Wisconsin. Of the fifty-six Minnesota had thirteen being surpassed only by Iowa with twenty-three.^a

There were also at this time, 1906, twenty-five municipally owned acetyline plants. Three of these were in Minnesota, and only one state, Florida, had more than this.

Thus it will be seen that as early as 1906 a considerable part of the coal gas produced by municipal plants was manufactured in Minnesota, that twenty-three per cent of all municipally owned gasoline and twelve per cent of all municipally owned acetyline plants were in this state. These gasoline and acetyline plants, however, located as they were in small cities and villages, were of but very little commercial value.

(4. New Plants Established and Tendency to change from private to municipal ownership since 1906.

The period from 1906 to 1914^{is} marked by the few new plants established and the change from private to municipal ownership in the small cities and village. There were

a. E. B. Smith - Municipal Gas Lighting. Legislative Bulletin No. 5, University of Wisconsin.

established during these eight years three coal and water gas plants, one gasoline, and three acetyline gas plants. This great decrease in the development of the gasoline and acetyline gas industry is due first of all to the reasons given under the discussion of the way these plants work and, secondly, to the fact that electric plants are generally more satisfactory for lighting purposes. Even though the first objections were wanting, electricity would probably gradually supplant gas in the small towns.

The City of Virginia started a new gas plant, October 14, 1914. Over 400 subscribers had been obtained by August 1st, and the plant was expected to cost about \$55,000. This makes Virginia the only city in the state owning a water plant and both electric and gas plants.

There appears to have been dissatisfaction on the part of many of the small cities and villages with the service and rates of gas companies. This is evidenced by the fact that six gasoline and two acetyline gas plants changed from private to municipal ownership during the period.^a

The companies were probably only too glad to sell out in most of these places as the plants appear to be anything but pay-

a. See table...page... in index. Most of these small cities and villages report that the price of gas was too high or that the service was "poor".

ing investments.

A summary of the gas plants in the United States in 1913 shows that there were 1453 distributing or producing manufactured gas. Of these 1108 made coal gas, 201 acetyline, and 114 gasoline. Twenty-eight of the coal gas plants, twenty-nine of the acetyline and sixty of the gasoline plants were municipally owned. The very small number of coal gas plants that are publicly owned in this country is the most remarkable feature of these statistics.

Of all the municipally owned gas works in this country 18 per cent of the coal and water gas, 24.1 per cent of the acetyline, and 27.4 per cent of the gasoline gas plants are located in Minnesota. This does not mean that eighteen per cent of all the coal and water gas manufactured by municipal plants is made in this state. However, if we count the plant in Duluth as municipal the percentage of gas actually produced is a considerable portion of the total, otherwise it is rather insignificant.

The large number of municipally owned acetyline and gasoline plants has come about through changes from private to municipal ownership rather than through construction

by city or village. Since 1902 of the plants begun through private initiative four have ceased operating and eleven have been sold to the municipalities. During this same period six municipal gas plants have ceased operations. Only one plant appears to have changed from municipal to private ownership.^a

5. Output of Municipal and Private Plants Compared:

In order to avoid over-emphasise of the importance of municipal gas works it may be well to give statistics of the amount of gas actually produced in these and in privately owned works.

There were produced in Minnesota approximately 4,000,-000,000 cubic feet of gas in 1913.^b Of this amount the privately owned gas plant in Minneapolis produced 53.75 per cent, and the one in St. Paul 31 per cent. The plant of the Zenith Furnace Company sold to the city of Duluth about 8.5 per cent of the state's output. The remaining nine largest cities all of which had gas plants except

a. This plant is in Madelia and was built by a company in 1902, was taken over by the city in 1905, and again became privately owned in 1911. For dates of other changes see page. The Municipal plant in Lambertton quit business in the later part of 1914 and the privately owned crude oil gas plant in Excelsior appears to have ceased operations on Mar. 8, 1914. See News item in Minneapolis Tribune for Mar. 8, 1914.

b. Returns of Municipal Reference Bureau, U. of M.

Virginia produced over five per cent of the total. Thus we see that about 98 per cent of the state's output is manufactured in the twelve largest cities of the state.

The greatest output of any municipal generating plant is 6,000 000 cubic feet or about one-seventh of one per cent of the state's total product.^a The plant in Renville comes second with 2,000,000 cubic feet. All the other municipal plants do not manufacture more than 5,000,000 cubic feet.^b

The acetyline and gasoline plants produced one fifth of one per cent of all the gas produced in the state in 1909.^c Since that time the production of the coal and water gas has ipreased very rapidly while the amount of gasoline and acetyline has decreased and apparently does not now amount to over one-tenth of one per cent of the total.

(6). Number of Consumers of Privately and Municipally Manufactured Gas Compared.

The number of consumers shows that ~~there~~ also the municipal ~~industry~~ has but a small share in the service. The total number of consumers in the state in 1913 was about

a. This plant is owned by the city of West Minneapolis.

b. Municipal Reference Bureau Reports.

c. United States Census 1909. Manufacture of Gas, page 10.

120,000 of which number 68,150 were in Minneapolis, 31,000 in St. Paul, and 9500 in Duluth.^a The number of consumers of municipally manufactured gas if we exclude Duluth is about 900 or three fourths of one per cent of the whole number. If Duluth is included the percentage becomes 7.84.

7. Future of Gas Industry in Minnesota.

Many of the gas plants, both municipally and privately owned, in the smaller places appear to be unprofitable and if the slight increase, in fact decrease, in the number may be taken as an indication of what may take place in this industry in the future, there will probably be but few new gas works established in Minnesota for some time.

Although it may be doubted whether or not electricity is doing much to drive gas out of the larger cities, it is certain that when the chief need is for lighting, electricity is in many ways more satisfactory and probably for power purposes also. This last is seen, for example, in Duluth. This city while owning its own gas distributing system, (buying gas at wholesale) finds it more profitable to use electricity than gas for running the pumps of the water plant.^b

a. Returns of the Municipal Reference Bureau.
b. Report of Water Department of Duluth for 1913.

This does not mean that the amount of gas used is going to decrease or even fail to increase. In fact, there is every indication that the great increase of the past few years may continue. The big field for gas now is for heating and cooking purposes, and as the price is lowered the consumption for this purpose will increase.

While there may be no increase in the number of municipal plants due to new undertakings, it is not unlikely that some of the large plants now operating may be municipalized within the next few years.

There has been much agitation and discussion concerning the present rates and apparent profits made by the gas companies of the state within the past few years. In each case there also appears, judging from the general spirit of news items in the daily papers, a rather important party in favor of municipalizing these industries.

The hardest fights against lowering gas rates have been made in the cities of Minneapolis,^a St. Paul,^b and Mankato.^c The rates have been settled and in most of the cities will not come up again for four or five years. Whether or not the sentiment at that time will be strongly

a. Minneapolis Tribune and Journal-News items throughout the year, 1914.

b. St. Paul Dispatch Pioneer Press and Daily News - May 13, 14, 18 and 19. - 1914.

c. Daily Free Press of Mankato, Mar. 11, April 13, 15 & 27. - 1914.

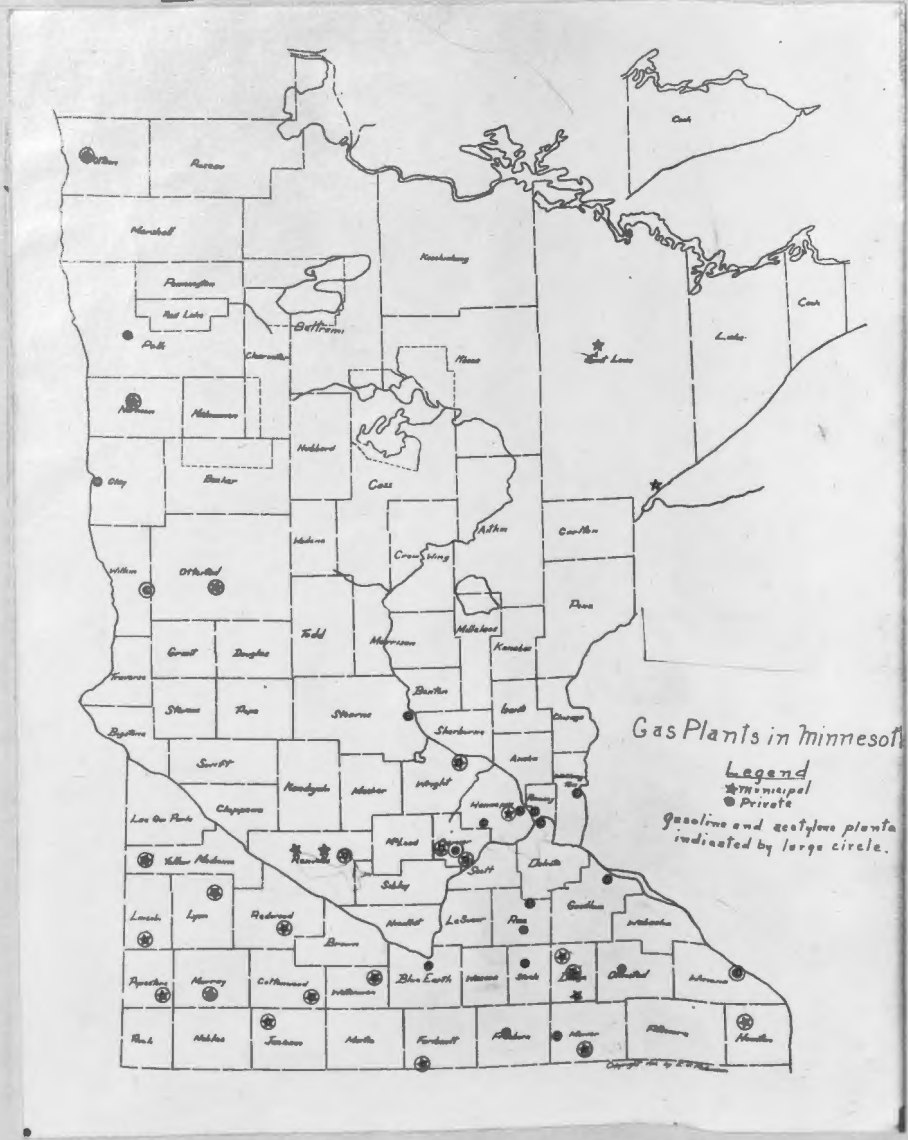
in favor of municipal ownership will depend largely upon the profits and attitude of the gas companies. If they are contented to earn only a fair income and show the people by reasonable publicity of accounts that they are doing this, there will be but little effort made toward municipalizing this industry in Minnesota.

Of course a great deal depends upon the general attitude toward corporations and trusts and on the social movement and the success or reputed success of municipally owned utilities in such places as San Francisco, Pasadena, Kansas City, Detroit (Mich.,) Cleveland and Portland Oregon.

In justice to the private companies of the state it should be said that only three states^a had lower average rates than Minnesota in 1909. The average rate was three cents lower than the average for the whole United States.

This is especially interesting when compared with the average rate in 1899, At that time twelve states had lower rates than had Minnesota whose average rate was twenty-seven cents in excess of the average for the whole country. The high rate at that time was no doubt due in a large measure to the fact that the industry was just beginning

a. Kentucky, New York and Ohio.



Gas Plants in Minnesota

Legend

* Municipal
 ● Private
 Gasoline and acetylene plants
 indicated by large circle.

Copyright 1914 by G. W. ...

Municipal Gas Plants Operating In Minnesota, Jan. 1915.

<u>Coal and Water Gas.</u>		
<u>Location</u>	<u>Date Established</u>	<u>Date Municipal- ized, if estab- lished by pri- v ate enterprise.</u>
Jasper	1904	
Renville	1906	
West Minneapolis	1912	
Duluth	1883	1898 a
<u>Gasoline Gas.(b)</u>		
Amboy	1902	1905 a
Bricelyn	1903	
Brandin	1906	
Cottonwood	1904	1913 a
Currie	1904	1911 a
Dodge Center	1903	
Hayfield	1904	1912 a
Hector	1903	1912 a
Heron Lake	1902	
Houston	1906	
Lake Benton	1903	
Lester Prairie	1904	1912 a
Mountain Lake	1902	
Renville	1906	
Sanborn	1906	
<u>Acetyline Gas.(c)</u>		
Battle Lake	1904	1913 a
Bird Island	1906	
Dover	1908	
Norwood	1904	1905 a
St. Bonifacious	1912	
St. Michael	1905	
West Concord	1908	

a. The plant was first privately owned and later taken by the city at the date indicated. City owns distributing system only at present.

b. There is one privately owned gasoline gas plant in the state, viz; Young America.

c. There is one privately owned acetyline plant in the state, viz; Rothsay.

to develop rapidly and in the second place that little had been done in the way of regulation and the companies were practically charging what seemed most profitable to them.

D. Other Public Industries.

(a) Ice Plants:

Miss Jeanie Wells Wentworth in a discussion of ice plants with special reference to the possibilities of municipal ownership of such plants in the United States, writes that "There is evidenced a widespread and growing interest, in this question and wherever the experiment has been undertaken in a businesslike way the results show a substantial profit on the investment where the ice is sold, or a corresponding reduction where the ice is manufactured for government use. So far only one municipal ice plant in actual operation has been discovered in the United States. This is in Weatherford, Oklahoma."^a The article referred to goes on to state that "several municipalities in England and Germany and a large number in northern Italy own and operate ice plants which yield a handsome profit." The agitation, according to this authority, for municipal ice plants in the United States started about seven years

a. This and following quotations are taken from the foreword in a "Report on Municipal and Government Ice Plants in the United States and other Countries." prepared by Jeanie Wells Wentworth of Columbia University, Dec. 15, 1913 for the President of the Borough of Manhattan, City of New York.

ago but the courts generally ruled that the city did not possess the power necessary for establishing and conducting this industry.

The agitation has been renewed, however, under the "home rule" idea and now "more than a dozen of our states have either 'home rule' for all cities, which would enable them to own and operate municipal ice plants or have passed enabling acts in regard to specific cities. "Of these the states most actively interested in the ice question at present include Oregon, Michigan, Oklahoma, Rhode Island, Connecticut, Missouri, Minnesota, California, Ohio, Maine, Wisconsin, Louisiana, Kansas, Illinois, and New York."

Borough President McAneny attempted to establish a municipal ice plant in New York City in 1913 but the proposition was vetoed by Mayor Gaynor. Concerning this attempt the National Municipal Review says: "Indeed it must be regarded as among the newest excursions in the field of city government but its urgency has long been apparent."

Wisconsin passed a law in 1913 providing for municipal ownership and operation of ice plants and Connecticut provided for such ownership in Hartford, New Haven, South

Norwalk and New Britain. The cities of North Dakota were authorized this same year to issue bonds for the purpose of constructing or acquiring ice plants.

It was mentioned in chapter one that a law had been passed in 1913 authorizing Minnesota cities of the first class to issue bonds to the extent of \$250,000, in addition to any previous debt limitation, for the purchase or construction of ice plants.

The demand for such a law was due chiefly to the high price of ice and poor service.

Although there is no municipal ice plant in the state at the present time, sentiment in favor of publicly owned plants has been quite strong in both St. Paul and Minneapolis.

St. Paul went so far in 1913 as to decide rather definitely upon having a municipal ice plant. A commission was appointed to investigate the ice situation, find out the cost of the proposed undertaking, and make a detailed report to the mayor and council of their findings. Before any action was taken on the report the city made arrangements with the Citizens Ice and Fuel Company by which the prices for 1913 were agreed upon and the water department empowered

to make rules and regulations concerning the harvesting and distribution of ice.^a

In 1912 the dissatisfaction with the ice companies appeared especially strong in Minneapolis. This dissatisfaction was evidenced by news articles in the papers throughout the year. Such headings of news items of the situation as follows were common during the year: "Ice from River is Germ Laden"^b, "Ice Price Rise Regardless of Merger of Two Companies."^c "State Legislature will be asked to pass Law Preventing Discrimination in Sale of Ice in Minneapolis."^d "Ice Cheaper to Big Buyers."^e The year 1913 passed without much agitation of the ice question and more general satisfaction seemed to prevail.

The question of municipalizing the industry has been raised again, however, by the ice strike in May of last year (1914). About this time a committee was appointed by the City Council to investigate the ice situation. This Committee, consisting of aldermen Johnson, Ziemer, and Rall, reported that in their opinion the city could manufacture and sell ice at a lower price than the price charged by the

a. Annual Report of Water Commissioners of The City of St. Paul, 1913, page 5.

b. Minneapolis Journal, February 2, 1912.

c. Minneapolis Journal, May 1, 1912.

d. Minneapolis Journal, Sept. 9, 1912.

e. Minneapolis, Journal, Sept. 23, 1912.

ice companies and advised that the city either buy or build an ice plant.

The question of municipalizing the industry was raised again, however, by the ice strike in May, 1914. About this time a committee was appointed by the City Council to investigate the ice situation. This committee of three members of the council, reported on May 22 that "it appears to your committee that ice can be produced and delivered to consumers for a price considerably less than is being charged the people of this city."^a The committee then recommended that the proposition of acquiring a new ice plant be submitted at the next election and that the City Attorney draft an ordinance to take over the ice plants of the city.^a

After further investigation and reports the council passed an ordinance on Sept. 25, 1914, "Relating to an providing for acquiring, constructing, purchasing, owning, maintaining and operating public ice plants in the City of Minneapolis".^b

The proposition was submitted to the voters of Minneapolis on November 3, 1914, in the form of two questions.

- a. Council Proceedings for May 22, 1914 page 617.
- b. Council Proceedings for Sept. 25, 1914, page 1158.

First, shall the city of Minneapolis acquire an ice plant. Second, shall the city of Minneapolis issue or sell interest bearing certificates to the extent of \$400,000 for the carrying out of this project. The vote on the first question was, yes 20,360; no 5729 and on the second, yes 16,261; no 6765.^c

The joint committee on Efficiency and Economy, and Commerce and Markets, to whom was referred the matter of acquiring and operating a municipal ice plant recommended April 9, 1915; that the Ways and Means Committee be authorized and directed to advertise the sale of, and sell \$30,000 in bonds and \$120,000 in certificates to cover the cost of erecting or acquiring by purchase, a municipal ice plant". The report was referred to the Committee on Ways and Means.^d It was also moved and carried that the "city attorney be directed to prepare the necessary resolutions or ordinances in the matter of the issuance and sale of bonds or certificates in connection with the establishment of a municipal ice plant."^e

c. Council Proceedings for November 13, 1914, page 1272. Report of Committee on Canvassing Election Returns.

d. and e. Official Proceedings of the City Council for April 9, 1914 as published in the Minneapolis Daily News April 14, 1915.

Although the discussion has been confined to the larger cities there seems to be no reason why the smaller cities of the state should not own and operate ice plants if by doing so they can furnish ice at reduced prices and without financial loss to the city.

Ice manufactured in connection with a water and electric plant is practically a by-product and where a city or a private company owns these two utilities, there seems to be no reason why it could not manufacture and sell ice at a very reasonable price.

The Electrical World, since about 1912, has given accounts of a number of private ice plants run in connection with electric plants. The headings of the articles suggest their success. Among them are the following: "Small Texas Ice Plant Earns 13.75 per cent on Investment"^a "Ice Plant was a Financial Life Saver"^b "Annual Profits of \$5900 From a \$10,000 Ice Plant Investment" "A 25-Ton Ice Plant that is a 39 per cent Investment"^c "Any 10-Ton Ice Plant will Make Money"^d "Very Satisfactory Addition to Plant"^e. None of the plants discussed under the headings

- a. Vol. 61, No. 13, Mar. 29, 1913.
- b. Vol. 61, No. 14, Apr. 5, 1913, page 729.
- c. Vol. 63, No. 22, May 30, 1914, page 1252.
- d. Vol. 61, No. 15, Apr. 12, 1913, page 782.
- e. Vol. 61, No. 15, Apr. 12, 1913, page 783.

given above are located in cities having a population of over 3500. It is claimed that some of these plants actually earn as high as 56 per cent on the investment.

The following is an extract from a letter from Hugh H. Cooper, Commissioner of Public Utilities in Weatherford, Okla., concerning the municipal ice plant in that city: "Our prices will be the same as last season. Delivered less than 1,000 pounds, 40 cents; more than 1,000 pounds, 30 cents. At platform less than 300 pounds, 40 cents; 300 to 1,200 pounds 25 cents; more than 1,200 pounds, 20 cents, car lots 15 cents (\$3.00 per ton). The operation of our plant last season was highly satisfactory, the people received better ice and full weights at a less price than formerly and the plant made a profit of \$2,500 for the season. Population of Weatherford 2,200."

These statements are suggestive at least of what may be done in many of our smaller cities which at present have a very limited supply of natural ice which is taken from impure streams or lakes. It will be interesting to watch the result of ventures at ice-making in small cities that have either light plants or water plants or both whether undertaken by the municipality or by private companies.

b. Public Baths.

(1) In the United States:

Previous to 1890 but few American cities offered any public opportunities for bathing although many European cities had established bathing places before that time. In 1893 England had 191 cities that had some sort of public baths.^a The public baths, such as they were, in this country in 1890 were with one exception open in the summer only.^b The first of these open air municipal baths was established in Boston in 1870 and the second in Brooklyn in 1875. The first all-the-year-round municipal bathhouse was opened in Yonkers, N.Y. in 1896. This bath had twenty-four showers and two tubs.^c

In 1904 there were thirty-eight cities having indoor municipal paths and in all eighty-eight bathing places. Of the eighty-eight bathing places, thirty-nine were supplied with showers and forty-nine open all the year round. The states doing the most along this line seem to be New York and Massachusetts. The legislature of New York passed a law in 1895 making it compulsory for

a. Dept. of Labor, United States-Bulletin #54, 1904, p.1245.
b. This exception was a small gymnasium in Boston. Dept. of Labor, United States Bulletin #54, 1904, p.1245. There has been no extensive data on the subject of municipal baths collected since 1904.
c. Ibid, page 1257.

all cities of over 50,000 inhabitants to maintain public baths and making it possible for all cities of the state to do so if they desired. The legislature of Massachusetts in 1902 authorized any city in that state to build^d and maintain public baths.

The two cities having the largest number of bathing places in 1904 were Boston and Chicago. Boston had twenty-four bathing places of which eleven were open the year around. Chicago had twelve of which seven were used in both winter and summer.^a

2. Public Baths in Minnesota.

Prior to 1900 there appear to have been no public baths whatever in this state. In that year, however, the outdoor Harriet Island Baths were opened in St. Paul and the next year, 1902, the outdoor Lake Calhoun Baths in Minneapolis.^a Both of these baths are open only during the summer months and are used chiefly as places of rest and recreation.

Since 1904 Minneapolis has established the Riverside Baths which are open the year round. This bath house is

- a. Dept. of Labor U. S. Bulletin #54, page 1256.
- b. Report of Municipal Baths in Minneapolis for 1913.

located in one of the poorer districts of the city and is well patronized. There were some 20,000 bathers in 1913.^a This was practically all that could be taken care of and Alderman Chase who has been most active in securing the municipal bathhouse claims that twice that many would have used the bath had there been room.

Mr. Chase is making every effort to have other municipal baths established in various parts of the city and also to have them as nearly free as possible. At present each bather is charged from two to ten cents for the use of the bath, towel and soap.

St. Paul has been in an even worse condition than Minneapolis until within the last year, having had only the outdoor baths at Harriet Island. In the early part of May 1914 the Wilder Municipal Bathhouse in that city was finished. This house built by and for the city from the Wilder Charity Funds, a gift to the city to be used for the "worthy poor of St. Paul" cost \$125,000 and is said to be the finest bathhouse in the United States. According to the labor department, bulletin before quoted, only one city, Boston, had, in 1904, a bathhouse that cost more than this one.

a. Report of Municipal Baths in Minneapolis, for 1913.

While it is not located in an attractive place it is thought to be the most accessible place for those who need it most. It is described as "As handsome^a as a pagan templeof white enamel brick and marble....The walls are of adamant, the floors and wainscoating of tile and marble." ^a There are twenty-seven shower baths for women, and seventy for men and each bather when he enters the bath is supplied with soap, and towel. ^b

Perhaps the most attractive feature of the whole place is the white tile plunge. The pool is thirty by seventy feet and grades off from three and a half to seven feet in depth. The most modern methods of heating, circulating, and refiltering the water are used. The temperature of the water is kept at seventy two degrees and the air at seventy-five degrees. The bottom of the pool is illumined by submarine lights which make it possible to see any object on the bottom even when the pool is full of water. A matron and life guards are always on hand.

The use of the bath is not entirely free but since there is a charge of but two cents for soap, suit, towel and the use of the shower, and five cents when the privilege of

a. Minneapolis Tribune, May 31, 1914.

b. No bathhouse in the United States had more than ninety six showers in 1904.

using the pool is included, it seems that it is within the reach of the poorest. The writer visited this bath house July 10th, 1914 and the attendants were scarcely able to take care of the large crowd of bathers. There were on the day previous to the visit over 1,200 bathers and the average for the month of June was 750 daily. The total number of bathers from June 1st to November 1, 1914 was 118,000. The authorities in St. Paul are planning to build smaller houses in other parts of the city if this one proves the success that they hope it will.

Both Minneapolis, and Duluth, and for that matter, all of the cities of the state, need public baths. Some of the smaller cities including Winona and Crookston have summer baths but none of the smaller cities appear to have the all-the-year-round bath.^a Duluth has one open-air bath house which is open during the summer.

Mr. H. Cleveland, Secretary of the Board of Park Commissioners of Duluth says that they are planning a new municipal bath house, and that if the tentative plans are carried out Duluth will have one of the best bathhouses in the state.

a. The Charter of West Minneapolis provides that the Council may establish municipal baths.

(c) Municipal Markets.

Municipal ownership of public markets has^{long} been common in European countries and in many parts of this country. There has also been a renewed and awakened demand for such markets in this country within the last few years.

The most important single work on this subject is probably "Markets for the People" by J. W. Sullivan. Mr. Sullivan sees in Municipal Open Air Markets and more especially the push cart market an opportunity for reducing the high cost of living.

Mr. Clyde Lyndon King writing on this subject shows that there is a strong tendency in this country for the municipalizing of public markets and concludes by saying "Municipal Markets unquestionably offer an avenue not only for simplifying the process of distribution but also for lowering the costs necessary thereto."^a

Don E. Mowny in an article on "The Municipal Market Situation" says "It is evident.....that there are going to be a good many markets on market centers established in the United States in the near future."^b

a. National Municipal Review. Vol.II-Jan.1914,p.142. "New Municipal Markets."

b. Ibid. Vol. I - 1912 p.412.

In spite of the apparent widespread agitation for municipal markets little has been done toward municipalizing or establishing municipal markets in Minnesota.

At the present time St. Paul, Fairbault, Eveleth, and Duluth appear to be the only cities that have municipally owned market places. The market place in St. Paul is centrally located, covers a whole block, and is run primarily for the benefit of producers and the people of St. Paul. The charge for stall rent is only such as will pay for the care and expense of the market. This expense amounted to a little over \$3,000 in 1913.^a

There are three open air municipal public markets in Duluth. These markets are open only during the produce season and then only three days per week. There is no financial statement of these plants although they are said to be "highly satisfactory."^b

The question of municipal ownership of the public market place has been discussed at considerable length in Minneapolis during the past year. The council appointed a committee in the early part of 1913 to investigate public markets, both privately and municipally owned in various parts of the country with a view to the purchase of the

- a. Report of the Municipal Market of St. Paul for 1913.
- b. Letter from the Secretary to the Mayor of Duluth.

Central Market in that City.^a

After considerable investigation the committee reported that they did not believe it advisable for the city to undertake the project at this time. One of the chief reasons for this decision seems to have been that the franchise of the present Central Market gives the owners exclusive permission for a public market in the fourth ward until 1917. The committee felt that the city could not favorably compete with this market if it attempted to establish one in a less suitable place and since the Central Market made concessions, of considerable importance to the city's demands, it was decided not to establish or purchase a market for a few years at least.

The only other publicly owned markets appear to be located in Faribault and Eveleth. The one in ~~Eveleth~~ is peculiarly interesting. This market was established about August first 1914 at a cost of \$10,000 to the city. It is run by a market master and assistant, their salaries being paid out of the city treasury. There is no income whatever from the market. The market master merely buys the produce from the sellers and sells it at the same price.

a. Second Annual Report of the Minneapolis Civic and Commerce Association Oct. 1913, page 69.

It is, perhaps needless to say that there has been a great deal of dissatisfaction on the part of the merchants and business men of Eveleth.

P A R T I I .

THE PRESENT STATUS OF
MUNICIPAL OWNERSHIP IN
MINNESOTA.

Chapter I.

Control of Municipally Owned Utilities.

Practically all the city and village charters make some provision concerning the public utility plants that they have or may acquire. The majority of the charters give the council wide powers concerning the policy to be pursued in the operation of the utility. In some instances the charter goes no further than to say that "the council may by ordinance, establish such rules and regulations as it may deem necessary for the management of the water works of the city." And "The council shall have power to maintain the water works now established, and to enlarge, extend, and improve the same or contract for a new system of water works at any time when public necessity demands." ^a

Other charters place the control and management of the plant in the hands of the council, but go into con-

a. Charter of the City of Faribault, p.73 and 74; See also Charters of Tracy, p.57; Ely, p.21; Worthington, p.31; Cannon Falls, p.27; Ortonville, p.47; Brainerd, Sec.131; and Glenwood, Sec.240.

siderable detail concerning certain things which the council may or may not do. Such rules as are laid down in the charter usually apply to conditions in general, for example it may state the maximum amount that the city may pay for the service, the manner of making extensions, and raising money therefore, or that the rates must be sufficient to pay all operating expenses.^a A few charters state the actual rates that the council must make.^b

A number of cities put their public utility plants in charge of a board of commissioners usually known as the "Water and Light Commission". These commissioners are usually three or five in number and serve five years. Where there are five it is usually required that at least three of them shall have been free holders in the city for at least five years when elected or appointed.^c These boards are apparently usually appointed. The commissioners may be appointed by the Court of the Judicial district in which the city is located. This applies only to the members of the first board. When it becomes necessary to make appointments a second time the council usually per-

- a. See Charters of Buffalo, p.18,19; Staples, p.56; Boudette, p.85, and 91; and Mankato, p.81.
b. See Charter of Lindstrom 1910, p.16; and Marshall for 1906, p.58.
c. Charter of Ada, 1908, p.25.

forms this function.^a

In a few cities the members of the board are appointed by the mayor.^b The 1913 charter of St. Paul provides for the election of a commissioner of public utilities. In at least one city the commissioners continue to be appointed by the court of the judicial district.^c

In almost every instance where a board of commissioners has charge of a water or light plant it is given almost unrestricted powers over the policy to be pursued in the operation of the plant. In cities having a commission form of Government the commission has charge of the public utility plants.^d The department in Minneapolis is under the supervision of the water works committee of the council.

- a. Charter of Ada, 1908, page 25, Sec. 93, and Moorhead, p.54; Worthington, Ch.6; Staples, Ch.6, Sec.92; Two Harbors, Ch.7, Sec.24.
- b. Charter of Austin, p.86; Redwing, Ch.7, Sec.2; Cannon Falls, Ch.1, Sec.10.
- d. See Charter of Glenwood, p.64; St. Paul, Ch.27.....; Duluth, Ch.4.....
- c. See Charter of Detroit, Ch.6, Sec. 85.

Chapter II.

Methods of Financing Municipal Plants.

A. Original Costs.

With a few exceptions all the municipal utility plants in the state appear to have been purchased or constructed with money raised by the sale of bonds. These bonds have as a rule had for security the credit of the city issuing them. In a number of instances certificates of indebtedness have been issued, the plant being pledged as security to the purchaser of the certificates. Such certificates, as mentioned in chapter one of Part I, do not constitute a part of the city's net, statutory indebtedness. The law not only provides for this but some of the city charters provide that "all bonds issued on account of any water works, gas works, electric light heat and power plant . . . shall be first lien upon the respective properties and the appliances and property connected therewith for which the bonds were issued", and shall not be considered general obligations of the city.^a

a. Charter of Faribault, Sec. 145. See also Charter of Glenwood, Sec. 136.

Most of the larger cities have issued the necessary bonds and sold them to the highest bidder according to statutory provisions. Many of the smaller towns, however, have borrowed the necessary money from the state. Cities wishing to do this must sell their bonds to the state and these bonds may draw not less than three per cent or be for less than five years or more than twenty years.^a

The state may levy a tax sufficient to pay the interest annually and also the principle of such bonds when due. The provision for the payment of the principle is very indefinite and it appears that the state may wait until the bonds fall due to make this levy. At least no sinking fund seems to be provided other than that any amount that is in excess of the interest for any year may be applied on the principle. While none of the larger cities have taken advantage of this law a large number of the smaller cities have done so.^b

B. Provisions for Bond Liquidation.

The larger cities of the state have until very recently paid their water and light bonds out of taxes, no

a. General Laws 1897, Chap. 83, par. 7, and 1907, Chap. 122, par. 10.

b. Statement of the Public Examiner of Minnesota for 1913.

sinking fund having been created out of earnings. The first bonds for establishing a water works system in St. Paul were issued in 1882 and were for \$350,000. One of the earliest issued in Minneapolis was on July 2, 1885 for \$280,000. This issue came due July 2, 1913.^a St. Paul started a sinking fund out of earnings a short time ago for bond redemption and this fund now (1914) amounts to \$122,589.41. The surplus revenue accredited to the fund in 1913 was \$128,206. Bonds to the extent of \$145,000 were paid from the fund August 1, 1913.^b The water department of Minneapolis pays neither the principle nor the interest on the bonds issued. This is taken care of by taxation.^c Duluth has had no sinking fund for bond liquidation up to the present. ¶ Heretofore all surplus earnings from municipal plants in the cities of the first class have been put into extensions. Because of the rapid development of all three cities, the cost of extensions in each city has been very large and in excess of surplus earnings. Of the \$9,224,936.20 put into the water plant in Minneapolis \$3,295,000 have been raised by bond issues,

- a. Report of the Water Works Department of Minneapolis for 1913, page 14.
- b. Report of the St. Paul Water Department for 1913, page 4.
- c. Report by City Engineer, F.W. Cappelin, May 8, 1914.

\$2,741,426 by assessments, and \$3,188,510.20 from earnings.^a

The provisions for bond retirement in the smaller cities of the state are various. As has been noted a number of these plants have been financed by state loans. A number of cities and villages permit the state to levy the tax necessary for paying the interest on the bonds.^c

About nineteen per cent of the cities make no provision whatever for retiring the bonds when due.^b In a number of the cities the bonds fall due serially after ten, fifteen, or twenty years. The city councils evidently intend to wait until the first bond falls due and then make the necessary tax levy instead of extending it over a longer period of years or of creating a sinking fund out of earnings.

a. Engineer F.W.Chappelen's Report on the Water Works Department, May 8, 1914.

b. Answers to questionnaires. This questionnaire was sent to practically all the cities of the state and contained the following questions:

1. Does your city own and operate a water works system, electric light plant, gas plant, market place, or bathhouse?
2. What is the cost to date of each? The original cost?
3. What is the present bonded indebtedness in each case?
4. What provision has been made for paying off the bonds?
5. Why did the city take it from the private company?

On next Page.

Mr. R. G. Price, Clerk of the city of Moorhead, states that the water and light department took up and paid off certain city bonds some years ago in return for which the city has assumed the indebtedness of this department. The bonds become due in 1916 and the city has already bought \$17,000 and has \$18,000 in the sinking fund to apply on the outstanding, leaving about \$5,000 still to be paid for.

The Charter of Breckenridge provides that any municipally owned public utility must "be self-sustaining or sold", and this is apparently interpreted to include depreciation or provisions for retiring bonds.

Virginia reports that it will pay \$25,000 annually on the outstanding bonds.^o Stillwater pays \$10,000 annually on the bonded indebtedness of a plant costing \$145,000 in 1911. It has also invested rather heavily in extensions each year since the purchase.

- b. Conc:- 6. When was the utility first operated?
7. When was it acquired by the city?
8. Is municipal ownership in your city considered successful?

By the use of "follow up" letters the writer succeeded in getting answers from about 65 per cent of the places to which these letters were written. The questions were arranged so as to be answered by merely filling out blanks.

c. The plants cost the city \$544,200.28 in 1913. The present indebtedness is \$430,000.

d. About \$10,000 of the amount paid for bond liquidation in the four years has been raised by a frontage tax. The total frontage tax when it is all collected will pay for the plant.

About ten per cent of both water and electric plants and a relatively larger number of gas plants are entirely free from debt.

C. Provisions for Extensions.

As before noted the surplus earnings of the plants in the large cities of the state have been put into extensions. These earnings have in no instance equalled the amount necessary for this purpose and there have been very frequent bond issues for extensions. In fact since 1883 the city of Minneapolis has made ten such issues ranging from \$50,000 to \$500,000 and St. Paul fifteen issues of from \$50,000 to \$400,000.^a

This method of providing for extensions has been used, but to ~~to~~ much less extent relatively, in the other cities of the state having a population of over 10,000. The writer has not been able to get a complete list of the bond issues made by the cities of the second class but such issues appear to have been made very rarely. These cities have generally made extensions out of earnings or by means of special assessments.

a. Reports of Water Departments of St. Paul and Minneapolis for 1913 and 1912, respectively.

The cities of under 10,000 population have made practically no bond issues after the plant was first established except when it was necessary to rebuild. Some of the city charters provide that all extensions must be made out of earnings. The largest city where this specific requirement has been found is Fergus Falls.^a The extensions are nearly always provided for in one of two ways; either out of earnings or by special assessment. Most charters do not take up this question at all but a few say that the rates must be sufficient to provide an extension fund,^b and perhaps a larger number that provide for extensions by permitting a special assessment in the form of a frontage tax.^c

Most reports maintain that the value of the plants has been enhanced by additions since they were originally built. This means that the extensions have more than equalled the depreciation. This takes for granted of course that the extensions have been paid for. However, in a few places the plant has been discarded as of practically no

a. Information obtained from the city clerk of Fergus Falls.

b. Charters of Staples, p.5456, and Austin, p.98.

c. For the nature of the provision see charters of Albert Lea, Ch.7, Sec.9; Ortonville, p.51; Mankato, Sec.217, (1911); Austin Ch.9, Sec. 26.

value even though no provision whatever had been made for paying off the outstanding bonds. The gas plant in Monticello has been abandoned although no payment whatever has been made on the indebtedness.^a

It is probably true that the extensions of a well-kept-up plant in any growing village or city will more than equal the amount of depreciation. This is much more apt to be true of a water system than of a light plant. The additions to the Minneapolis water system make up by far the greater part of the \$8,792,174.93 at which it is now valued. Of course in the larger cities a considerable portion of the extensions have not been paid for out of earnings but by bond issues.

The extensions out of earnings in Stillwater have averaged \$4,000 yearly since the city acquired the plant in 1911. It would seem that where this amount is expended for extensions and bonds paid at the rate of \$10,000 yearly in so small a city, that an unnecessary burden is placed on the consumers, both these amounts being taken out of earnings, with the exception before noted. A number of villages and cities seem to be overly anxious to "get out of debt".

a. From City Clerk.

Sometimes the tax payers and sometimes the consumers are called upon to bear the unnecessary burden.^a This condition is not the rule, however, by any means.

a. See Report of Cloquet, Eyota, Fosston, Kelliher, Madelia, and others.

Chapter III.

The Reports of Public Utility Plants.

A. General Form of the Reports,

It appears from an examination of the financial statements, of the public utility plants of Minnesota, that this feature of municipal ownership is more open to serious criticism than any other. There is absolutely no uniformity nor any particular system used in making these reports. Each is made in the way that the commissioner, city clerk, or engineer, as the case may be, thinks best. This, however, would not be so serious a criticism were the reports always made in a form intelligible to the inhabitants of the city or village. Even the deductions or conclusions made by the one who makes out the report often prove to be erroneous, not however, because of dishonesty.

Over fifty per cent of the reports examined consist of a statement of receipts and expenditure only. As a

rule there is nothing in these reports to indicate the value of the plant, the indebtedness, the value of material, (coal, supplies, etc.) left over from the past year, or still on hand at the close of the year, the probable depreciation, or the amount invested in permanent improvements or extensions. Added to these defects we find that in many places the charge to the city for water or light is made without regard to the amount used or the cost of readiness to serve. This criticism applies to water works more generally than to lighting plants since electricity is usually furnished the city according to the regular scheduled rate. Beside these complexities most of the cities and villages owning both water and electricity or gas works publish reports of the two together. It is often difficult, if not quite impossible, to determine the exact status of the separate utilities. A proper separation of the accounts is difficult because of the fact that almost without exception, where both the water and light plants are owned by the city, the engines and pumps are located in the same building and tended by the same engineer and superintendent, which of course is the most economical

*each
step*

arrangement possible. In some of the smaller cities the superintendent of the water plant is also the marshall. However, it seems that it should be possible to approximate very nearly the amount of time, fuel, and space devoted to each utility, thus getting at the true cost of operation. A few of the cities make such approximations very carefully.

It should, however, be stated that the majority of the larger cities do give more than a statement of receipts and expenditures and that as a rule the smaller the city the more meaningless the report. That this sort of accounting is not confined entirely to the smaller cities is evidenced by the fact that the city of Red Wing publishes a long-drawn-out account of receipts and disbursements only and Litchfield a statement of assets and liabilities only in addition to this account. Stillwater has, beside the receipts and disbursements account, an extension account and also some valuable statistical information.

B. A Model Report - Water Department of St. Paul:

While there are a number of very satisfactory and business like reports among which may be mentioned those of Duluth, Minneapolis, Austin, Moorhead, Two Harbors, and

Alexandria, by far the best report is that furnished by the city of St. Paul in regard to its water works. While it may be open to some criticism, it is in most respects very good and might be used as a model by all the municipalities in the state owning any public utilities.

Following is a reproduction of the report of the city water works as published by the city of St. Paul for the year ending December 31, 1913. The headings and subheadings only are given all figures being omitted since it is the form only that is desired. Statements F, G, and H. are omitted.

The Water Department of the City of St. Paul.
Financial Statement.

Statement "A"
December 31, 1913.

ASSETS

COST OF ACQUISITION AND CONSTRUCTION:
(As per Statement B).....
Deduct: Frontage Tax.....

SINKING FUND:

Investments.....
Uninvested.....

ACCOUNTS RECEIVABLE:

Meter Accounts.....
Flat Rates.....
Miscellaneous.....
Frontage Tax.....
Hydrant Rental.....

INVENTORY:

Supplies and Material.....
Tools and Equipment.....
Office Furniture and Equipment.....

CASH:

Balance with City Treasurer.....
In hands of Secretary and Cashier....

LIABILITIES

BONDED INDEBTEDNESS:

Bonds Issued.....
Deduct: Bonds Redeemed.....
Bonds Outstanding.....

ACCRUED INTEREST ON BONDS.....

SUNDRY CREDITORS:

Audited Vouchers.....
Refunds in Suspense.....
Unclaimed Wages.....
Outstanding Accounts.....

(Concluded on next page)

The Water Department of the City of St. Paul.
Financial Statement
Conc:-

LIABILITIES Conc:-

PAYMENTS IN ADVANCE:

Rates.....
Meter Setting.....
Service Connections.....
Fire Protection.....
Paving Replacements.....

SURPLUS:

Balance January 1, 1913.....

ADD:

Excess of Revenue over Operating
and Maintenance, Including Fixed
Charges on Bonded Indebtedness
(Statement "C").....
Premium on Sale of Bonds.....
Premium on Securities.....
Sinking Fund Earnings.....

Statement " B " .

STATEMENT OF EXPENDITURES FOR ACQUISITION OR CONSTRUCTION
OF PROPERTIES.

December 31, 1913.

Expenditure to January 1, 1913.....
Expenditure for Additions and Improvements
during Year 1913:
Lands, Reservations and Water Rights....
Aqueducts and Conduits.....
Buildings on Watershed.....
Pumping Equipment.....
Distribution Mains and Appurtenances....
Fire Hydrants and Hydrant Connections...
New Meters.....
Storehouses, Stable and Shop Buildings and
Equipment.....
General Offices.....

Expenditure to December 31, 1913 (as per finan-
cial Statement "A").....

NOTE-- The expenditures for the year () have been
made out of the proceeds of the sale of a bond issue of
(). The balance unexpended has been encumbered
by contracts, not yet completed, amounting to (),
for which the Department is contingently liable.

STATEMENT "C"

REVENUE STATEMENT FOR THE YEAR ENDED DECEMBER 31, 1913.

CLASSIFICATION OF EXPENDITURE.

GENERAL ADMINISTRATION:

Executive Expenses.....
Auditing and Accounting.....
Purchasing and Storekeeping.....

WATER SUPPLY:

Administration:.....
Collection and Storage.....
Pumping.....
Distribution.....
Analysing and Testing.....
Meter Setting, Testing and Repairing.....

WATER REVENUE COLLECTION:

Administration.....
Adding and Accounting.....
Inspection.....

Total Operating Expenses and Maintenance Charges.....

DEDUCT:

Indirect Expenses Charged to Outside Parties
(Statement "D").....
Net Operating Expenses and Maintenance Charges.....

DEBT SERVICE:

Sinking Fund Installments.....
Interest on Bonded Debt.....

SURPLUS--Carried to Financial Statement.....

CLASSIFICATION OF REVENUE.

REVENUE FROM SALE OF WATER:

Meter Accounts, including Penalties.....
Flat Rates, including Penalties.....
Building Purposes.....
Sewer Flushing.....
Street Sprinkling.....
Miscellaneous.....

OTHER REVENUE:

Fire Protection, including Hydrant Rental
Rents.....
Frontage Tax.....

Total Revenue.....

STATEMENT "D"

STATEMENT OF RECOVERABLE EXPENDITURES.

For the 12 Months Ended December 31, 1913.

NEW INSTALLATIONS:

Service Connections.....
Meter Setting.....
Temporary Mains.....
Automatic Sprinklers and Private
Fire Hydrants.....

REPAIRS:.....

TURNING ON AND OFF:

New Service.....
Old Service.....

MISCELLANEOUS.....

Excess of Charges Over Cost, representing
provision for overhead expenses (car-
ried to Statement "C").....

STATEMENT "E".

CASH RECEIPTS AND DISBURSEMENTS.
For the 12 Months Ended December 31, 1913.

Balance on Hand January 1, 1913.....

RECEIPTS:

Meter Accounts.....
Flat Rates.....
Building Purposes.....
Sewer Flushing.....
Street Sprinkling.....
Fire Protection.....
Service Connections.....
Meter Setting.....
Repairs.....
Turning on Charges.....
Miscellaneous Accounts Receivable.....
Rents from Properties.....
Frontage Tax.....
Sale of Land.....
Sale of Bonds (4½%).....
Premium from Sale of Bonds.....
Interest on Bonds Sold.....
Sinking Fund Earnings.....
Unclaimed Wages.....
Audited Vouchers (Cancelled).....

DISBURSEMENTS:

Salaries and Wages
Material and Supplies.....
Miscellaneous Expenses.....
Interest on Bonds.....
Sinking Fund.....
Water Rates and Charges Refunded.....
Outstanding Accounts, 1912.....
Purchase of Meters.....
Acquisition and Construction.....
Office Furniture and Equipment.....
Tools and Equipment.....
Unclaimed Wages.....

Balance on Hand December 31, 1913, as per
Financial Statement.....

The Statement "A" of this report should undoubtedly be a part of the financial report of every public utility in the state. The general form or Subdivisions of the statement are very satisfactory. Under assets all the main divisions and practically all the subheads should occur in every report even though published by a village of 1,000 inhabitants. Practically the same may be said of the liabilities side of the statement. Even when a statement of assets and liabilities is given it is often impossible to get at its true significance.

Statement "B" which is an extension account should also be a part of every report, providing any permanent improvements have been made and if no such improvements have been made there should be a note to that effect. This report as indicated by the statements examined, is made by only about twenty-five per cent of the cities operating utility plants.

Any kind of a financial statement that made a pretense at giving the true financial operations of the year should include some report corresponding to Statement "C". Such, however, is not the case. Only twenty-

eight per cent of the reports examined furnished a revenue statement. The classifications, given in statement "C" of the St. Paul report, might with but few changes, perhaps in the subheads, be followed by any city in making up its operating account.

Statement "D" while less necessary as a part of the reports of small cities might profitably be used by nearly all if not all the cities of the state. It answers the question of who pays for such things as repairs, meter setting, turning off and on, etc., and shows also just how much the plant is charging above the actual cost of such things.

Statement "E" in a more or less complete form is to be found in every report, in fact in the majority of the reports it is the only statement given.

Some such report as the one just examined^a should be sent to every municipality in the state in order that they may get some idea of what a real report should consist of. Not only should this be done but if we are to study profitably the results of municipal ownership, every city should be required by the state to follow as nearly as possible

a. Two statements have been omitted from the reproduced report.

some ideal form of reporting. Then each city should be required not only to publish an annual report, but file a copy of this report with certain other statistical information concerning amount of current or water used, number of consumers, rates, etc., with the Public Examiner. Here the reports may be tabulated and a copy of the tabulation sent to every city owning and operating a public utility. In a few years sufficient information might be gathered together to make possible a very profitable study.^a

Such results can probably be best attained, if not through a state commission as Wisconsin has, through some water and light board such as Massachusetts has. The excellent and complete reports obtained by this board make possible complete and valuable data.^b

C. Combined Reports.

Not only are the reports open to criticism because of their form but also because of the fact, as before suggested, that oftentimes the accounts of two or more public utilities are run together so that it is practically impossible to determine which of two plants, water and gas

a. Mr. T. W. Mitchell, in a paper read before the League of Minnesota Municipalities says: "In conclusion your committeeman recommends that an attempt be made to amend those sections of the statute that do not make it mandatory upon the public examiner to prescribe the accounts to be kept by the municipalities and make them uniform in such a manner as to make such prescription mandatory. He also recommends that the legislature be urged to provide the public examiner with sufficient funds and staff to enable him to carry out the order."
b. See Annual Rpts. of The Board of Gas & Electric Light Commissioners.

for example, is being run at a profit or loss as the case may be. This makes it very difficult to determine what would be just rates. In so large a place as Duluth until the last year much of the expense connected with the water and gas departments was divided between the two departments in an absolutely arbitrary way. As a result it was found after investigation, that the water department was being charged from two to fifty per cent more than its share on a large number of items. This made the already high rates appear too low to pay the expenses of the department. Such is doubtless often the case where the city owns its light and water. Whether or not the water department is usually charged with more than its share of expenses, as seems to be the case, the report is still open to the criticism that the expenses are not divided in a business-like way for determining what are just rates.

The writer is not unaware of the difficulty of determining just what part each department should bear of such expenses as office rent, engineer labor, bookkeeper hire, etc., but it is probably not impossible to determine the proportion with a fair degree of accuracy.

Public utility plants make misleading reports also because of the failure to charge or credit the industry for services rendered in connection with many other departments of the city. The city clerk often times has a goodly portion of his time taken up with handling the accounts of public utilities although no charge is made against the utilities on this account. The same is true of the legal department of the city and sometimes of the police department. However, these items are usually rather unimportant as compared with the total income or expense of the plant and while they should by all means be properly handled as a matter of proper accounting their importance in the actual financial affairs of the plant are apt to be over-emphasized.

What is perhaps more important than any of the points mentioned is the fact that the services of one utility is often furnished free or above cost and no definite record made. The electric plant may be furnishing power for pumping water and the plant be given no credit or the water department may furnish water for street sprinkling, sewerflushing, or paving and no record whatever be made of this service.

This condition of improper reporting is brought out in a recent report of the Railroad Commission of Wisconsin.

It may be presumed that conditions are not much different in Minnesota than ⁱⁿ Wisconsin. The report says :-

"The Commission has taken the attitude that a municipal plant should report earnings for services furnished by one department to another in the same way as though the utility stood apart from the general city administration. Thus, hydrant rentals should be reported as an earning to a municipal plant, even though as some municipal clerks have said, 'It is only taking something from one pocket and putting it into another'. The fact remains that the utility has furnished the service and has earned a return for it, regardless of whether or not it actually has any more cash on hand to show for it. Unless some such interdepartmental transactions are reported no fair comparisons can be made between privately and municipally owned plants."^a

a. Wisconsin Railroad Commission, Vol. 6, 1910, p.148.

Chapter IV.

What the City Pays in Support of Its Public Utilities.

A. For Electricity.

It is difficult to determine what the city pays for its light because of the fact that a large percentage of the cities pay for current by the kilowatt instead of at so much per year and the total amount is often not stated in the reports. Again it is rather difficult to determine even where the current is furnished at a yearly rate, the relation between the charge made by private and municipal plants. This is due to the fact that the number of lamps, and what is even more significant, the kinds of lamps, vary greatly in different cities. Not only is the number of lamps different but the time when they are burned varies greatly. In some plants they are burned until midnight, in others all night, in still others a "moonlight schedule" is used.

Because of these difficulties it has been thought best to not take up this division of the subject here but to leave it to our discussion of rates. Water rates only will be considered in this chapter.

B. For Water.

The amount that the city pays for water and fire protection seems to be determined almost entirely by accident or by what some others city pays. There are at least two things to be considered in determining what the tax payers should pay in support of a city's water works. The first and most important I believe is the cost of the readiness to serve in case of fire. This is also known as the peak load or readiness to serve cost. One of the most important uses of any water system is the protection that it gives in case of fire. This protection necessitates a larger plant and more powerful engines than would otherwise be necessary. The tax payers should pay this fixed overhead expense due to the protection given. It is interesting to note that at least one city charter, Ortonville,^a provides that no tax shall be collected for fire protection or hydrant rental unless the property taxed is protected.

Just what proportion of the total overhead expenses should be charged to the protection or readiness to serve account, can be determined~~only~~ by an examination of the

a. Charter of Ortonville, Sec. 76.

plant by a competent engineer. Since the exact percentage can be determined only after expert calculation for each individual plant it is evidently impossible for me to say what this amount should be in any individual case. Nevertheless, it is probably not impossible to tell with a fair degree of accuracy what the average charge in per cent of the total cost against the city should be. The Railroad Commission of Wisconsin has often had to determine what the city's share should be. In its decision of the City of Washburn vs. Washburn Water Works Co.,^a it held that 58.2 per cent of the cost of the plant was due to municipal service; in Civic League et al, vs. Beaver Dam Water Co.,^b it held that 60 per cent of the operating expenses including taxes was due to the cost of fire protection and city service; in Superior Commercial Club et al, vs. Superior Water & Light & Power Co.,^c it held that 46 per cent of the total cost of the plant was due to fire protection and city service; that 63.4 per cent of the operating expense including taxes was due to this protection; and in Rollins et al, vs. Village of Montfort^d it held that 75 per cent

- a. Wisconsin Railroad Commission Report 1910, Vol.6, p.79.
b. Ibid, 1912, Vol. 10, p.66.
c. Ibid, 1912, Vol. 10, p. 704-764.
d. Ibid, 1913, Vol. 12, p. 285.

of the total cost or 60 per cent of the operating expense should be attributed to fire protection and city service.

These figures are doubtless too high for large cities, Mr. Chappelin, city engineer in Minneapolis figures that the readiness to serve or the peak load in case of fire of the Minneapolis water plant increased the overhead expenses not less than twenty-nine per cent. After the investigations made by the Railroad Commission of Wisconsin, it is probably not far wrong to say that in cities of less than 20,000 the additional cost due to fire protection is at least equal to one-half the cost of the plant.

In the introduction of the Minnesota Public Utility Rates^a page 13, the statement is made that it has generally been held by competent engineers that the cost of providing water and fire protection (water and hydrants) for cities varies from one dollar to one and one half dollars per inhabitant.

The second item in determining what the city should pay the water department is the amount of water actually used for such things as public buildings, drink-

a. Report of Municipal Reference Bureau of Minnesota on Public Utility Rates in Minnesota in 1914. Prepared by G.A. Gesell of the University of Minnesota.

ing fountains, sewer flushing, street sprinkling and flushing, etc.,etc. There seems to be no reason why such water should not be paid for by the city.

The question now arises, what are the cities of Minnesota doing in this regard? To begin with we may say that taking the cities altogether, this is a very difficult question to answer. It is not especially difficult to determine what the city pays to or is charged by the water department but the problem is to determine what the city pays toward bond liquidation and also bond interest.

In the table on page 204 interest paid by the city on both the water works and electric lights has been counted as a part of its water rental.^a The number of blank places in the column headed "per cent city pays of expense of water department" indicates how unsatisfactory has been the effort to find this out. Any sort of an average will be of no value due to the large ranges in the percentage. For example, St. Paul pays as hydrant rental and for water used only 16.6 per cent of the expenses of the water department, and Duluth 31.35 per cent as hydrant

a. It is practically impossible to determine just how much of the interest should be charged to water or light since the water is seldom fully paid for by the city. The writer has credited all money actually paid by the city, as water rent or interest, to the water account

rental alone. Minneapolis, according to the figures of city engineer Cappelen, should pay 32.5 per cent of the total expenses (this includes water used by city for various purposes.) There is but little doubt that St. Paul is paying too little for her fire protection. The hydrant rental is only fourteen dollars per hydrant annually while the average for the whole county is about forty dollars. The rental in Duluth on the other hand amounts to seventy-five dollars per annum. Mr. Chappelen's estimate of what the rental in Minneapolis should be is \$35.78.

Even greater differences are found in the smaller cities of the state. The range is from nothing or at least an undeterminable amount in probably thirty per cent of the cities to as high as 84.7 per cent in Willmar. The cities of Stillwater, Red Wing, and St. Cloud pay 37.1, 32.7, 47.4 per cent respectively of the total expense of the water department.

The question after all is not the per cent that the city pays of the total expense, but the way in which this amount is determined. Almost no city figures out just what the

tax payers share of the total expense is and makes rates and taxes accordingly. A comparison of the amount charged the city in the public plants of Minnesota or Wisconsin with the private plants in Wisconsin seems to indicate that almost without exception the private plants charge more than do the public.^a There is no doubt in the mind of the writer but that the cities in Minnesota permit the tax payer to pay less than his share of the cost of operating the water departments or at least have done so in the past. The subject discussed in this chapter will be further developed in the chapter on Rates.

a. See table page. 236

Chapter V.

Are the Municipally-owned Public Utility Plants of Minnesota Being Operated on a Sound Financial Basis.

A. The Problem and Method of Analysis of Data.

This is one of the most debated and most debatable points to be dealt with in a discussion of this kind but nevertheless a discussion that did not try to solve this problem would probably be considered barren of results.

The first and most common cause of the lack of knowledge on this point is the meagerness and indefiniteness of reports furnished by our municipalities. Not only are such reports apt to be hard to analyse of themselves but the affairs of the plant are so often made such an almost inseparable part of the general affairs of the city that it is quite impossible to come to any certain conclusion from an analysis of such reports.

The chief difficulties may be suggested by an enumeration of the points offered in argument by those favoring and those opposing municipal ownership of public utilities.

Chief among the arguments of those opposing municipal ownership are, first, that the city is able to maintain certain rates^a, which may or may not be below the average, because bonds and oftentimes interest are paid out of revenue raised by taxation rather than through the sale of the commodity produced. Second, not only must the tax payers do this but they at the same time lose considerable sums that should accrue to the city in the form of taxes if the utility plants were owned by private companies and subject to taxation. Third, that the added power that comes to city officials increases graft and dishonesty. The charges amount to saying that because of false economy or actual dishonesty the municipally owned plants are poorly managed and are more costly, everything considered, than where such utilities are privately owned.

On the other hand those who favor public ownership are inclined to emphasize the fact that oftentimes water, and sometimes electricity and gas are furnished free to the city or at a very low rate and that were these services properly paid for and permanent improvements and extensions

a. Mr. C. Wellington Koiner, Electrical Engineer and general Manager of Municipal Lighting works department, Pasadena, Calif. says "The argument put forth by the opponents of municipal ownership is that rates are the only thing considered." See Annals of American Academy, Jan. 1915.

charged to capital they would more than compensate for what the city pays for bond liquidation and interest and for what it loses in the form of taxes. They also argue that the rates to individual consumers are usually lower than where plants are privately owned.

In answer to the charge that such ownership promotes graft and dishonesty the contention is made that there is at least no more graft under municipal than under private ownership and that a certain civic pride is fostered which becomes a strong factor for good in the municipality.^a

The discussion which is to follow is based, first, upon the data contained in Chapter 15, of the Report of the Minnesota Tax Commission for 1911, and second, upon the study of the financial reports of some forty cities of the state. The material found in the report of the Municipal Reference Bureau of the University of Minnesota has been freely drawn upon as have of course the returns from the questionnaire sent out by the writer and numerous personal letters.

a. Mr. Frederick C. Howe, Commissioner of Immigration N. Y. city says in the January 1915 Number of the Annals of the American Academy in discussing municipal ownership, "The real gains are social, ethical and political. Where public ownership prevails there is none of the corruption and class warfare which is found in America and which is largely traceable to the private ownership of these valuable concessions from the community." See page 207.

The aim has been to try to give weight to the questions and arguments raised above and to present data in a form that will lead to some sound general conclusion if possible. No attempt has been made to study the effect of municipal ownership on city officials. The amount allowed for depreciation is taken as given in the reports when it appears to be reasonable (high enough). When no depreciation is allowed for in the report it is estimated in ^{the} following arbitrary manner which the writer believes to be more than ample allowances for this purpose: The rate of depreciation in electric light plants is taken as 5 per cent for all plants irrespective of the size of the plant. The rate of depreciation in water works is taken as 5 per cent for plants located in cities of less than 1,000, 3 per cent in cities of from 1,000 to 2,000, 2 per cent in cities of from 2,000 to 5,000 and 1½ per cent for all other cities.^a

a. The legislature of Massachusetts, in 1891 provided that in determining operating expenses for electric service depreciation should be reckoned at not less than 5 per cent. This act was repealed in 1906 and it was provided that depreciation should be reckoned at 3 per cent, on the cost of the plant exclusive of its land and water power appurtenances - Civic Fed. Rpt. op. cit. Part II, Vol. II, p. 981

The Wisconsin Railroad Commission in re Fond Du Lac Water Co., 5 W.R.C.R. 482,502, 1910 - says that for nine electric plants examined the average life was found to be 17.46 and for six gas plants 33.68 years.

Continued on next page.

In the analysis of the data examined permanent improvements are charged to capital and depreciation to operating and maintenance expenses. No effort is made, however, to determine what the city should pay for service but all payments made by the city either as pay for water, or for interest on bonds or for bond liquidation is included in "what per cent the city pays of total expenses of the water department", column 9 page 204. In determining what the plant earns on the value, the total expenditures are represented by payments for operation and maintenance and depreciation, no allowance being made for interest payments. In determining the amount earned on city's equity the item of interest is added to the other expenditures before this is calculated.

a. Continued:

Again it states that "on a straight line basis the composite rate of depreciation of the entire property of electric utilities has frequently been found to be from 4.5 per cent to 5 per cent ----City of Rhiendler v. Rhiendler Light Co., 9 W.R.C.R. 406-426, 1908.

Out of a large number of water works cases tried before the Commission no one has been found in which the depreciation allowed was greater than two per cent -- In re Manitowac Water Works Co. 7 W.R.C.R. 71-79, 1911. In re Oconto Water Supply Co., 7 W.R.C.R. 187, 350..1911. City of Janesville v. Janesville Water Co. 7 W.R.C.R. 628 650, 1911. City of Marinette v. City Water Co., of Marinette 8 W.R.C.R.334,364. 1911.

If depreciation was allowed for on a 4 per cent sinking fund basis in the indicated instances it would need be only about one-half of one per cent of the value of the plant or about one per cent if on a two per cent sinking fund basis.

B. Analysis of the Data
Contained in Chapter 15 of
the Report of the Tax Com-
mission of Minnesota for
1911.

(a) Survey and Criticism of the Data contained in
the Report.

This chapter of the report of the Tax Commission of Minnesota is entitled The Cost of Government in Minnesota and is very largely the work of Dr. V.E. Robinson of the University of Minnesota and also Chairman of the Tax Commission of 1911.

The report shows the receipts and expenditures of every city and village in the state for 1911 and since it lists the receipts and disbursements of public service enterprises separately it furnishes a very valuable source of information concerning the financial operations of such public service enterprises.

In his deductions from the data given Dr. Robinson speaks of the ratio of receipts to expenditures. When this ratio is less than 100 per cent it means that the expenditures of or for the utility were greater than the receipts. When the ratio is more than 100 per cent it

means of course that receipts were greater than expenditures. It is with these data and these ratios that the first part of this chapter is concerned.

It may be well before beginning the analysis to criticize the method used by Dr. Robinson in compiling his data and obtaining his ratios.^a

In the first place public service enterprises as used in the report includes water works, electric plants, gas plants, auditoriums, halls, cemeteries, and "other public service industries." Now while halls and cemeteries may be classed as public service industries it seems to the writer that it is a mistake to include money either expended for or received from such services when computing a ratio that will be suggestive of the success or failure of municipal ownership of public service industries. Halls and often times cemeteries and perhaps "other public service industries" are not supposed to be any more self supporting than streets and sewers.

For the reasons suggested the data concerning water

a. The writer in his criticism and analysis is in no way trying to belittle this excellent report but is trying to call attention to certain things that in a superficial examination of the report might be overlooked and hence a wrong impression be obtained.

and light plants only have been analysed. These are generally supposed to be self supporting. *i*

In the second place all disbursements, for operation and maintenance, interest payments, bond payments, and permanent improvements are included in expenditures. Here again the writer does not believe that the proper method has been pursued if we wish to draw conclusions as to the success of municipal ownership. It would seem that much better results could be obtained if a proper depreciation charge was allowed for in the expenditures and the amount spent for permanent improvement charged to capital account. Dr. Robinson in discussing this point recognizes the difficulty but maintains that since in the long run the sum spent for improvements must be paid, improvements made annually would just about equal the annual depreciation. This would doubtless be true in an old or well developed state but in a state like Minnesota where the total urban population increased 38.6 per cent in the last decade,^a the permanent improvements are undoubtedly in excess of the depreciation even over the ten year average. The writer has ~~included~~ depreciation and excluded outlays

a. U. S. Census 1910, Vol. II. p.961.

for permanent improvements in obtaining the ratio of receipts to expenditures.

Third, although the total receipts include what was received by the plant, nothing is said concerning the water and light furnished free of charge to cities. It would seem that before our "ratio" could have any actual significance we would have to know something on this point. An effort has been made in this paper to show the relation between what the city should pay for service and what it actually does pay.

Fourth, and last, nothing is said in the report, when commenting on the "ratio" concerning rates to consumers as compared with rates where plants are privately owned. This is surely a very important factor.

The report gives all data of receipts and expenditures on a per capita basis and for this reason the writer has followed that plan. Of course the expenditures and receipts might be reduced to the actual amounts received or expended by simply multiplying the per capita amount by the population. It seems, however, that the method pursued cannot be open to any very serious criticism. The object to be attained is a true statement of the ratio of receipts

and expenditures of public service industries after all charges properly chargeable to operation and maintenance, interest, depreciation and extensions are properly allowed for and when the plants are credited with an amount which might fairly be charged for water and fire protection furnished to the city.

The depreciation charge and also the estimated amount properly chargeable to the city for water and for fire protection has been reduced to a per capita basis in order that it may be used in connection with the data given in the report, e.g., if the total depreciation is figured at \$1000 and the population of the city is 1000 the depreciation will be given as \$1.00 per capita and hydrant rental and water used by the city are treated in the same way.

The question may be raised as to the advisability of comparing per capita water charges in various cities. It may be argued that because the per capita rate in one city is \$1.15 it does not hold that other cities having rates of 50 cents or \$2.00 are paying more or less than a fair amount. While this is true yet when comparing a large number of cities under practically similar conditions such

a comparison broadly speaking may be of value. Or again when a city pays nothing for hydrant^s or water actually used it seems only fair if depreciation and interest is charged to the plant to allow some amount based on comparisons for this purpose.

When expenditures or receipts are reduced to a per capita basis in the second part of this chapter it is entirely for the purpose of comparisons, which seems the most logical way when a considerable number of cities are being compared.

The cities of the state are divided into five classes as follows: Class I, all having a population of over 75,000; Class II, 5,000 to 20,000; Class III, 2,500 to 5,000; Class IV, 1,000 to 2,500; Class V, less than 1,000. The same classification has been followed in this chapter.

(b) Analysis of data arranged according to the cities in which the utilities are located. ✓✓✓

Class I.

This class includes Minneapolis, St. Paul and Duluth. In his comments on cities of this class, Dr. Robinson shows that the ratio of receipts to expenditures in each of the three cities is as follows: Minneapolis, 68.8^a per cent; St. Paul, 92.3 per cent; and Duluth 102.9 per cent, or,

a. This number is the ratio for water and light plants only. When the ratio is given hereafter it refers to this ratio.

including interest 60.6 per cent, 77.7 per cent, and 81.1 per cent respectively. If we exclude outlays for permanent improvements the following ratios are obtained: Minneapolis, 170 per cent; St. Paul, 100 per cent; and Duluth 120.7 per cent. These percentages must of course be erroneous as far as reflecting actual conditions of operation go since no allowance has been made for depreciation during the year.

A depreciation charge of $1\frac{1}{2}$ per cent on the value of the water plants in each city would be amply sufficient to cover all depreciation,^a and 2 per cent on the gas plant in Duluth.^b

If this rate of depreciation is used it would make the depreciation 43.8 cents per capita in Minneapolis on a plant valued at \$8,792,174.^c The depreciation in St. Paul amounts to 31.4 cents per capita on a plant valued at \$4,479,599, and in Duluth \$1.00 per capita on the Duluth gas plant valued at \$1,073,158 and the water plant valued at \$3,104,687. The value in Minneapolis and Duluth is

a. See page 150....

b. See page 150., Distribution system only owned by city.

c. The amount put into the plant since it was begun, less about \$40,000 - the value of land donated to the department.

practically taken as the cost of the plant to date. Some \$1,176,355.36 has been written off the value of the water plant in St. Paul. The total expenditures for this plant including the purchase price is \$5,655,599.16. The amounts spent per capita for improvements during the year were \$1.58 in Minneapolis, \$.68 in St. Paul, and \$2.66 in Duluth.

If we now take as the sum that should represent disbursements in obtaining the ratio, the expense of operation and maintenance plus interest on bonded indebtedness, plus depreciation the following ratios are obtained 105.2 per cent for Minneapolis, 90 per cent for St. Paul, and 97.6 per cent for Duluth. These ratios in the opinion of the writer are more truly representative not of actual receipts of expenditures but as indicating the financial operations of these plants than those given in the Tax Commission Report.

However, it would seem quite necessary to give some attention to the other two factors spoken of above, viz., cost of service to private consumers and amount paid by the city to the enterprise for service received. In this consideration it will be necessary only to mention the

rates in these cities. The rate of eight cents per 1,000 gallons of water in Minneapolis and St. Paul and the equally low flat rates are below the average minimum rate for the country as a whole.^a It would thus appear that the consumers in these two cities are being furnished water at a very low rate. The water rates in Duluth vary from eleven to twenty cents. These rates although in excess of the rates in the other two cities seem not to be unreasonable after allowing for the peculiar difficulties to be overcome in the operation and construction of a water plant in that city. The gas rates which are fifty cents for lighting and seventy-five cents for heating per 1,000 cubic feet are very low as compared with rates in other cities.^b

Concerning the amount paid by the city: Minneapolis pays no rental on 5,188 hydrants and only four cents per 1,000 gallons for water used in public buildings, parks, schools, etc. No charge is made for street sprinkling or fire protection. If we use the total receipts as given plus the amount which Mr. Cappelen estimates is the actual cost per capita for fire protection and water used, the

a. The average maximum rate for water furnished thru meters is given as 23 cents and the average minimum 9 cents. Municipal Journal for June, 1913. These are, I believe, weighted averages.

b. These low rates are due in part, at least, to the fact that the gas is a by-product of the Zenith Furnace Company.

ratio becomes 150.4 per cent or excluding the item of depreciation but including improvements 81 per cent instead of 60.7 per cent. The amount spent for improvements in 1911 was especially high because of the installation of the new filter.

The city of St. Paul pays fourteen dollars per annum for each of 3,372 hydrants. No charge is made for street sprinkling and water for public buildings, school houses, and parks is furnished at eight cents per thousand gallons. This income amounts to about 12.5 per cent of the total expenses of the plant or 22½ cents per capita. If the actual cost of the service is equal to thirty per cent^a of the expenses the per capita rate should be about fifty-five cents instead of 22½ cents. If the hydrants were charged for at \$35.78, the estimated cost in Minneapolis, it would amount to practically fifty-five cents per capita. Adding the difference of the estimated cost of service per capita to the amount actually paid per capita by the city to the plant and then finding the ratio, we find it to be 103.4 per cent or excluding depreciation and including improvements for the year, ninety per cent.

a. The estimate for Minneapolis by Mr. Cappelen was 32 per cent. While this may be no reason for assuming that it would be this in St. Paul it seems likely that it would be somewhere near this.

The situation is somewhat different in Duluth. Here the hydrant rental on 987 hydrants averages about seventy-five dollars per annum and water for other purposes is paid for at the regular rates. The average per capita rate is slightly more than one dollar. It appears that the former ratio of 97.6 per cent is about right for Duluth.

Class II

Dr. Robinson^a states that the twenty cities of this class owning public service enterprises in 1911, received only 78.7 per cent as much as was expended in support of them, or including interest 63 per cent, only seven of the 21 show ratios of over 100 per cent. If there were no important qualifying conditions this would truly be a bad condition of affairs. As it stands, a further analysis may throw some light on the situation.

The first thing to be considered is the item of outlay for improvements^b. This averaged \$1.35 per capita varying from nothing in Albert Lea, Fergus Falls, Crookston and

Report

- a. See page 312. (75.7 per cent for all public service industries.)
- b. It should be noted that outlays for improvements include "betterments financed from loans."

Rochester in \$5.96 in Austin, and \$5.23 in Brainerd. The problem is, as in the study of cities in the first class, to determine the relation of the amount spent for permanent improvements to the amount that should be allowed for depreciation. While we do not have the data for all the cities in this class, it would seem from the data at hand that the total value of all the plants could not greatly exceed \$3,000,000.^a The total indebtedness in 1911 was \$1,108,001 and since five cities, Virginia (no water and light plant at that time), Hibbing, Brainerd, Rochester, and Albert Lea report no such debt, it is probably not putting it too high to say that the cities net equity, will average fifty per cent of the total value. The net equity of the cities of the first class in 1913 was forty-one per cent and of the cities listed in Table , page.4.5.. 53.4 per cent. This seems somewhat less than the total value if estimated on a basis of per capita cost. The average per capita value for the seven cities which have only water plants is \$17.60, and for the four having both water and light plants, \$37.54. The average for the four plants, excepting Virginia is \$33.50. The plants in Virginia

a. See table on page.4.5.....

appear to be overvalued because of the high value placed on land. If, however, we use these averages the total value appears to be about \$3,495,000. This represents not the actual value at the present time, but the amount of money put into the plants since first begun. If now depreciation is allowed for on this amount at the rate of two per cent for water plants and five per cent for light plants, the total amount that should be allowed for depreciation is found to be \$93,916 or 54.5 cents per capita instead of \$1.35 per capita the amount spent for improvements.^a

a. Since the value of the plants play an important part in determining the actual profit or loss of water or light plants the writer has made an attempt to find the values of such plants for places outside of Minnesota, where the data are available.

In "Reports of Municipal Accounts" - Iowa 1914, which is the 7th Annual Report of the Department of Finance and Municipal Accounts of Iowa, is given the value of the municipally owned water and light plants of that state. The average cost per capita for lighting plants in 21 cities having populations of between 2,000 and 10,000 was \$15.00 and for 42 water plants in cities of between 1500 and 10,000 \$15.00 per capita also. Of the 21 electric plants the per capita value of 14 was between \$10.00 and \$20.00, 4 were above \$20.00 and 3 below \$10.00. Twenty-nine of the municipally owned water plants were valued at between \$10.00 and \$20.00 per capita. 8 above \$20.00 and 5 below \$10.00. Only two plants were valued above \$30.00 per capita. The average cost for water works in cities of less than 4,000 was \$12.00 per capita.

The Board of Gas & Electric Light Commissioners' Report Public Document #30, p. 210-1913, of the State of Mass. gives the total cost to date of 30 municipally owned electric plants in cities of less than 10,000 population.

On next page.

It is very difficult to make any significant deductions from data at hand concerning the amount paid by the city for water or light used. The following may be of some value however and the writer considers the figures used very conservative.

The average hydrant rental in the cities of this class is \$41.20 or sixty-four cents per capita. The average hydrant rental in the eight Wisconsin cities of this class which have privately owned water plants, is \$48.90 or one dollar per capita.^b If the difference between the amount charged the city by private plants and municipal plants, granting that conditions are similar, be taken into account, it is evident that the city owning its own water works pays about forty-six cents per capita less than the city supplied by a private company. If forty-six cents be added to the receipts as given in the Tax Commission Report, the total sum credited to the plant becomes \$3.54 per capita and the ratio of receipts to expenditures, 114.2 per cent or allowing for interest, which amounts to twenty cents per capita, 103.2 per cent.

a. Conc:- The average per capita cost of these 30 plants was \$15.00 and for those in cities of less than 4,000 \$12.00. There were 20 plants where the cost was between \$10.00 and \$20.00 per capita, 4 where it was above \$20. and 6 where it was below \$10.

b. 5 cities of 10 in the class give the total amount charged the city. See Wisconsin Railroad Commission Report on Water Rates for 1912.

In the eighteen cities owning water utilities or both water and electric utilities the ratio is, excluding interest and improvements, 110 per cent or including improvements, 78.7 per cent. This means that the per capita receipts are thirty cents in excess of expenditures for operation and maintenance.

The cities owning the water but not the light plants show the receipts to be 21.3 cents per capita less than expenditures for operation and maintenance, or including improvements about \$1.41 less. A similar analysis of the data for cities owning both water and light plants shows that for the four, the receipts exceed expenditures for operation and maintenance by \$3.07 per capita. The average amount spent for improvements in these cities was \$3.62 per capita, leaving total expenses including improvements, but not interest, \$5.55 cents in excess of total receipts. The total receipts per capita were \$7.70 and the total expenditures \$8.25 making the ratio of receipts to expenditures 93.3 per cent as opposed to 78.7 per cent for the industries all taken together and for all the cities. These figures are of course taken from the data furnished

in the Tax Commission Report and make no allowance for water furnished at less than cost or at least less than the usual rate.

It may be of some value to note that if the cities do get their water at forty-six cents less^a per capita, than do cities supplies by private companies, and this is added to the receipts as found for these cities, the ratio becomes 98.9 per cent. The average interest charge per capita in the cities is only 22½ cents. This rate, which is only two-and-one-half cents in excess of the average for all the cities owning either or both utilities, is due to the fact that one of the four cities, viz., Brainerd, has no outstanding bonded indebtedness on its public service enterprises and the cities' equity average is about 80 per cent of the total value. The indebtedness in the other cities is as follows: Austin, \$10,000; Fergus Falls, \$130,000; New Ulm, \$30,000.

After making a liberal allowance for depreciation, 2 per cent and 5 per cent, the total interest, figured on the indebtedness, plus depreciation could not exceed \$1.40 per capita in these cities. This then would

a. See page 164....

make the total for operation and maintenance, interest, and depreciation \$6.03, the total receipts amounting to \$7.70, and the ratio now becomes 127.7 per cent.

The rates charged individual consumers in cities of each class will be considered in the chapter on "RATES".

Class III.

There were twenty-four cities in this class in 1911. The ratio of receipts to payments of public utilities was 90.9 per cent, or higher than in either of the other two classes thus far considered. The ratio if the amounts spent for improvements are excluded was 130.2 per cent.

The report does not give the bonded indebtedness of public service industries in this class. Of the twenty-four cities fifteen own both their water and light plants (all light plants are electric except the gas plant in West Minneapolis). Of these fifteen, eight are listed in the Table on page 45.... The total value of the eight was (1913) \$814,643 and the indebtedness \$269,400 or thirty-three per cent of the net value. This makes the value of fifteen plants about \$1,530,000 and the in-

debtedness \$50,000. The value of the water plants in the cities owning ~~only~~ water plants^{only}, on a basis of sixteen dollars,^a per capita, amounts to about \$500,000. The indebtedness in this case would be \$165,000^b if figured at thirty-three per cent.

Depreciation at the rate of three-and-one-half per cent on combined water and light plants and 2 per cent on water plants only amounts to about \$65,000 or 82 cents per capita.

The payments would now be: for operation and maintenance, \$3.67; for depreciation, 82¢; and for interest, 37½¢, making a total of \$4.865 per capita. This makes the ratio of receipts to expenditures 104.4 per cent.

If the cities having both water and light plants are considered in a class by themselves, the amount spent for improvements averages \$2.14. The expenditures in Fairmont amounted to \$12.87 per capita, practically enough to

a. This is the average cost of the plants, the value of which is known. It is slightly above the average cost of Iowa plants.

b. The interest actually paid on the indebtedness capitalized at 4 per cent, which is about the average ratio on municipal bonds in Minnesota, is equal to \$604,500 or \$60,000 less than the estimated value.

build a whole new water plant. The total expenditures then for these cities is \$7.77 per capita and the receipts are \$7.45, and the ratio 95.9 per cent.

The depreciation, in these cities amounts to \$1.08 per capita. If this figure is used instead of \$2.14, Cost of improvements, the ratio of receipts to payments in these cities becomes 104.8 per cent.

A study of payments made by municipalities directly to the water departments show some rather striking conditions. Of the thirty cities having populations of from 2,000 to 5,000^a sixteen pay an average of \$45.80 for hydrant. This does not include two cities that pay no hydrant rental or six others that fail to make clear whether or not any such rental is paid.

The twenty cities which state the total amount paid to the water plant for hydrant rental and water used for all purposes, average 43.8 cents per capita.

Of the six Wisconsin cities of this class which are supplied by private companies, five give the rental per hydrant per annum and three the total amount charged the city per annum^b. The average rental per hydrant is

a. Seven of the cities have populations of less than 2500/

b. See Table page 236..

seventy-four dollars and the average charge per capita \$1.35. While the number considered may be too small to be of much value it may be noted that for the three cities, giving the total charge against the city, the average rental per hydrant is sixty-nine dollars, or five dollars less than the average for the five.

It is evident that while the amount paid to the plants in these cities is somewhere near the amount generally considered right for such service, it is ninety-one cents in excess of what paid to the municipally owned ones.

If the amount paid by the cities to the municipal plants is increased by ninety-one cents the total receipts would be \$5.99. This would make the ratio 123 for all the plants in all the cities, and for plants in the cities owning both water and light plants, 117.7 per cent.

Class IV.

The large number (95) of cities in this class makes the study very interesting although at the same time

much more difficult than for the cities in the other classes,^s while only three cities^a in this class have neither gas nor electric light, seven cities^b do not have water plants. Of the cities having both water and light plants, forty-six own their own public utility plants both water and light. There are three water plants privately owned in this class.^c The ratio of receipts to expenditures is 74.2 per cent or 60^d per cent if interest on bonds is included. Thirty-two cities show their public service industries as having greater receipts than expenditures.

Of the ninety-five cities only the small number mentioned above and Coleraine, Proctorknot, and Sandstone are without their own water plants. Fifty of the 95 show in their reports no expenditures whatever for improvements during the year. This indicates that a number of these cities do not differentiate between money expended for permanent improvements and for maintenance and this is just what a number of the reports received by the writer show. This applies to a less degree, to cities of classes 2 and 3.

- a. Bovey, Waterville and Brown's Valley.
- b. Chaska, Red Lake Falls, Le Sueur, North Mankato, Waterville Edina and Tower. Fifteen of the cities in this class are not listed in the Municipal Reference Bureau Report. op.cit.
- c. Proctor, Sandstone, Coleraine.
- d. 56.2 for all.

In trying to get a t the value of the public service industries in these cities, it may be questioned whether or not the cost of water or light plants or both would be the same per capita as in the cities of classes 2 and 3. An average of the rather small number of water plants given in the Table page 45 gives a little less than ten dollars per capita as the cost of water plants in these cities. The cost per capita in these smaller cities is usually very much less than in the larger cities.^a This is the case in nearly all the plants the value of which is known. The average value for the six combined water and light plants is \$22.50 per capita. The cost is probably much less here for the combined plants than in larger cities. If the cost is put at twenty-five dollars per capita, it will probably be sufficiently high.

Using \$15.00 per capita for water plants and \$25.00 for combined water and light plants for calculating the total cost of the public service industries, we find it to be about \$1,797,000 for the cities owning both water and light utilities and \$686,000 for the cities having water only. If depreciation is allowed for on

a. See note b page 164.

these values, the first at four per cent and the second at three per cent, \$90,935 is found to be the amount that should be allowed for depreciation for the year. This is equal to about 56.5 cents per capita.

The bonded indebtedness for public service industries in this class is not given in the Report. The total interest paid on such debt, however, is given as \$32,986.63 which amount capitalized at four per cent^a is equal to \$824,666, which, if the bonded indebtedness is equal to half the value of the plants, would seem to indicate that the value of such plants was about \$1,650,000. The amount estimated above is \$2,433,000.^b The figure obtained by capitalizing the interest is probably more nearly the amount put into the various plants but the former figure has been used in figuring depreciation.

The amount allowed for depreciation, 56½ cents per capita, plus interest, 20½ cents per capita, equals 77 cents per capita. Using this sum instead of the amount spent for improvements, the ratio is found to be 80.5 per cent instead of 60 per cent.

a. See footnote b on page 168.

b. The bonded indebtedness for fourteen cities, which have water plants only as shown in the Table on page 45... is \$8.90 per capita, or somewhat more than half the value of such plants.

An examination of the data for cities owning both water and light plants shows the ratio, excluding improvements, to be 97.2 per cent.^a As before suggested a large number of the cities in this class do not distinguish between money spent for improvements and for maintenance, and hence the rather low ratio even where outlays for improvements are excluded. The amount that would have to be allowed for depreciation and interest is about \$1.50 per capita which is just about the same as the per capita expenditure for improvements and hence the ratio is about the same in either case.

It is practically impossible to compare the amounts paid by cities in this class for water and fire protection with amounts paid by cities to similar privately owned plants for the reason that we have no data for privately owned plants. There are but three such plants in Wisconsin, and three in Minnesota.

Of the cities in this class, about eighty-four have water plants. Seventy are listed in the Report of the Municipal Reference Bureau. Of these, forty-eight state the total amount paid by the city. Of the forty-eight,

a. The cost of improvements in Tracy, Farmington, and Mountain Iron were \$8.78, \$10.89, and \$13.21 per capita respectively.

twenty-five pay nothing whatever directly to the plants, The per capita average for all is a little less than forty cents. The average rental per hydrant for the forty-one plants answering the question is \$22.50 or for the twenty-three that make such a rental charge, forty dollars. Eighteen of the plants make no rental charges whatever for the hydrants. The majority of the plants not answering the question probably make no charges.

The average hydrant rental in the three Wisconsin cities is \$105.50 and for the two privately owned Minnesota plants giving this information, fifty dollars. The average per capita cost in the Wisconsin plants appears to be something over \$1.15 and in the Minnesota private plants seventy cents.

If we may consider the municipal plants as receiving about seventy-five cents less per capita from the cities than they justly should for hydrant rental and fire protection, and add this to the receipts, the ratio for all the plants is found to be 97.5 per cent and for the cities having both water and light plants about 98.5 per cent. The low ratio in the cities having both water and light is

believed to be due to the fact that most of the cities do not distinguish between expenditures for improvements and upkeep.

Class V.

No attempt has been made to analyze the data for public service industries in this class of cities. The Tax Commission Report gives the total receipts of public service enterprises (including all) as \$77,998.24. The total payments for maintenance are given as \$64,818.69; for interest, \$933.08; and the payments for improvements, \$57,939.93. The ratio exclusive of improvements is thus seen to be 121.6 per cent or including improvements, 63 per cent.

It should be borne constantly in mind that nothing has been said about what the city pays for its electricity when the plant is municipally owned as compared with what it pays when the plant is privately owned or about rates to private consumers in the two cases. These are shown to be significant in the chapter on rates.

(C. Analysis of Financial Statements of Publicly
Owned and Operated Utilities in Minnesota.

This is an analysis, as before mentioned, of the financial statements ^{for 1913 and 1914} of utility plants in various cities of Minnesota supplemented by much additional information.

In the analysis of these statements an attempt has been made to determine the percentage earned on the value, total cost to date in most cases, of the plant and also the amount earned on the city's net equity. In determining the total expenses depreciation has been allowed for as before indicated and interest whether paid by the plant or the city, has been charged to the plant. The receipts of the plants include all money paid in by private consumers or by the city. All money paid by the city as interest on utility bonds is credited to the city in the column headed per cent of total expenses of water department received from city, in the table on page 204.. This applies to the water department only as given in the table on page 204., but any interest paid by the city on either water or light bonds is counted in estimating the total necessary expenditures of the plant or plants.

In figuring the percentage earned on the value of the plant no allowance is made for interest payments. However, in finding the amount earned on the cities' equity, interest payments are added to expenses of operation, maintenance and depreciation.

The data upon which the following discussion is based are taken from reports in the hands of the writer and will be found in tabulated form on page 236. The reports were chosen as much at random as possible, although an effort was made to collect as many as possible from the cities of 5,000 population and over. It may be that the cities where municipal ownership is most unsuccessful are the ones that refused or could not submit their reports.

Class I.

Minneapolis Water Department.^a

There has been considerable question during the past two years as to whether the water department in Minneapolis is being operated on a sound financial basis. The charge has been made that the present water rate is not sufficient

a. The data used in this discussion of the water works department of Minneapolis are taken from Mr. Cappelen's, city engineer, report to the city council on May 8, 1914. This was a special report requested by the council in order that it might learn the true financial condition of the water works.

to pay all the expenses connected with the plant and that a new rate schedule should be instituted. In answer to this demand, the city council instructed city engineer, F.W. Cappelen "to make a thorough examination of the Water Works Department in all the branches, and a physical valuation of the plant so as to establish a proper charge for the depreciation and interest with the object in view of putting it on a thorough business basis."^a

It may be stated that much of the misunderstanding in regard to the water works is due to the fact that, although the city pays the interest on outstanding bonds, and also provides for liquidating those bonds, it pays nothing to the plant directly for hydrant rental, and only one-half the regular price for water actually used. The interest amounts to about \$100,000 annually. At the same time extensions have in part been provided for out of earnings. In fact, of the total cost of the plant, about thirty-three per cent has been so provided.^b

The total operating and maintenance expense for 1913 was \$275,502.27 and the total revenue \$500,621.62. This,

- a. There is now (April 1915) an agitation, within the council itself, for a "thorough investigation" of the water dept.
- b. The city has paid in interest and for bonds \$2,920,350. The apparent balance of earnings is given as \$601,020.95.

however, makes no provision for the various factors named above.

The additional cost of the plant due to the greatest possible fire demand is used as the basis in determining the amount that the city should actually pay for fire protection. The low winter demand is 14,000 gallons per minute and the fire department 12,00 gallons or forty-five per cent; the yearly average is 18,000 gallons, and the fire department 12,000 gallons or forty per cent; the maximum consumption is 30,000 gallons and the fire department 12,000 gallons or twenty-nine per cent. Mr. Capelen says he considers it "exceedingly fair to use the twenty-nine per cent". This would make the cost of the plant due to the fire department about \$2,262,556.22. The report assumes that a charge of six per cent will care for interest, sinking fund and depreciation. This would amount to \$135,753.37 which sum, plus the street service charge, the pumping cost chargeable to the department, and the cost of the water actually used for fighting fires equals \$158,579.12, the amount chargeable to fire protection. This amounts to \$35.78 per hydrant.

The water now furnished at half rate and free if charged for at eight cents, would cost \$83,527.43.^a This would make the total cost to the city \$242,106.55 or about seventy-six cents per capita. The total revenue would now be \$742,728.17. The report allows six per cent on the value of the plant, less the amount paid out of earnings to cover interest and depreciation. This amounts to \$323,485.56, which sum plus the operating maintenance expense, equals \$596,987.93. Subtracting this from the revenue the surplus is found to be \$145,740.24 or about 2.35 per cent on the city's equity.^b If six per cent is charged on the outstanding bonds only, the surplus is \$310,225.90, or about five per cent on the city's equity.

It seems to the writer that it would be better in attempting to determine the surplus, to allow for depreciation on the whole value of the plant, and interest on the outstanding bonds only and since depreciation is allowed for, there would be no necessity for making a separate allowance for a sinking fund. By figuring this way, the income on the city's equity is found to be about 4.58 per cent, and ^{on} the value of the plant, 3.73 per cent.

a. Water is furnished free for sewer construction and flushing street sprinkling and flushing, paving construction, curb and gutter construction, skating ponds, bridge construction, house connection inspection and for fires - Other cities depart-
-on next page-

In view of the fact that the water works department is not run as a money making concern, it would seem that the present rate of eight cents per 1,000 gallons is sufficient to cover all expenses. If those in charge of this department would pay all expenses, including interest, and make provision for depreciation, or bond retirement, out of earnings after receiving a just amount from the city, based on actual cost, a much more satisfactory report could be made and there would be less complaining.

The St. Paul Water Works.

The report for the St. Paul Water Works for 1913 begins by stating that "The reorganization of the entire Department was effected during the months of January and February, 1913, since which time the business of the Department has been carried on in accordance with recommendations made by J. H. Clowes of the New York Bureau of Municipal Research and the results obtained are sufficient evidence to prove the wisdom of adopting ~~and~~ pursuing the policies now in effect." ^c The excellent form of this report has already been referred to.

a. con: are furnished free. There were 874,600,000 gallons furnished at half rate.

b. By city's equity is here meant that portion of the plant that has been paid for on which there is no debt, whether the payments have been made out of earnings or out of taxes.

c. 32nd Annual Report of the Water Dept. of St. Paul, 1913, p. 3.

Little of the indefiniteness of the report for the Minneapolis Water Works is found here. The interest on bonds is paid out of earnings, and while nothing is allowed for depreciation as such, a sinking fund is provided for. The city pays a certain definite sum for fire protection and for water for public buildings, schools, parks, and playgrounds. Water for street sprinkling is furnished free.

The revenue statement for the year gives the expenditures as \$324,885.98, including \$85,281.69 for interest and \$88,200 for a sinking fund, and the revenue as \$424,882.76, including a frontage tax of^a \$75,095.95, leaving a surplus of \$99,996.78.

A further analysis will make clear the true meaning of this report. Instead of allowing the sum given as a sinking fund, we may put in its place a depreciation fund equal to one-and-one-half per cent of the value of the plant. The operating and maintenance expense plus the depreciation now amounts to \$226,747.64.

It would seem hardly fair to include under receipts the amount raised by the frontage tax since this is merely a tax for the payment of extensions. Subtracting this from the receipts as given, we have for actual receipts from

a. This is a tax levied against abutting property owners when new mains are laid for the purpose of paying a part of the cost of such mains.

operation, \$349,786.81. The surplus now appears to be \$123,039.17 or a fraction less than three per cent of the value of the plant or a little over two per cent of the total cost up to date or 5.18 per cent on the city's equity after allowing for the amount written off.

The total amount paid for fire protection including 3,372 hydrants, is \$518,018.88. The hydrant rental is fourteen dollars per annum. The total amount paid by the city is 16.6 per cent of the total expenses. If the cost of the St. Paul plant for fire protection, and the amount of water used is the same relatively as the cost in Minneapolis the amount paid by the city should equal \$168,000 or about fifty per cent of the total expenses. This higher percentage is due to the relative difference in operating and maintenance expenses. These charges amount to about ninety cents per capita in Minneapolis and seventy cents per capita in St. Paul. In spite of this, it would seem that the amount chargeable to the city could not be less than \$150,000 or about forty-six per cent of the total expenses. The hydrants alone figured at \$35.78, the estimated cost in Minneapolis, would rent for over \$120,000. Charges in

Minneapolis against the city for purposes other than hydrant rental should amount to \$106,353.18, according to Mr. Capellen. It will be seen that we have allowed less than one-third of this sum for St. Paul instead of two-thirds as might be expected according to the populations of the two cities.

If we allow \$150,000 as the amount properly chargeable to the city the earnings amount to 4.93 per cent on the value of the plant; on the cost 3.83 per cent and on the city's equity 9.3 per cent. It might be stated here that the city and the frontage tax payers paid the plant \$128,189.83 or about \$22,000 less than the sum the city should pay as estimated above.

The water commissioners in their report to the mayor and city council state that "the revenue of the Department during the year has been sufficient to pay all expenses of operation and maintenance and to set aside \$85,281.69 to pay the interest on the outstanding indebtedness and transfer to the sinking fund for the redemption of outstanding bonds \$88,200.00 and still leave a surplus of \$99,996.78." An analysis of the report confirms these statements and justifies the optimistic attitude of the water commissioners. The surplus according to our analysis after allowing for

interest, leaving out of the income the frontage tax, but charging the city with \$150,000 is \$135,757.48.

Duluth Water Works.^a

The operating and maintenance expense, including depreciation was \$128,722.49 or including interest, \$238,222.34. The total revenue was \$326,105.66. This gives as the net surplus for the year \$197,382.17 or 6.6 per cent of the value of the plant. The surplus is only \$87,883.32 in excess of the interest but since the plant is so heavily bonded, the cost of the plant is \$3,104,687, and the indebtedness \$2,542,145 or 81.9 per cent of the value. the department earns 15.6 per cent on the city's net equity.^b

When we come to consider the amount paid by the city for fire protection and water actually used a very different situation is found from that in the other cities of this class. The hydrant rental is given as fifty dollars per annum for each of 987 hydrants. In addition to this \$25,885.16 was raised by taxes for "the reduction of water rates". This can be considered as hydrant rental only and

a. Report for 1913.

b. The department has been at a great expense since taking the water and light plant in 1898 due to the very rapid extension of the plants. The original cost was but since that time the miles of water main have been increased from to 14811 in 1913 and gas mains from 29 to 132.1 miles in 1913.

the actual rent for hydrants appears to be \$76.20 per annum. The amount expended then for hydrant rental is 31.35 per cent of the total expenses as compared with 29 per cent estimated for Minneapolis. The per capita charge in Duluth is 88½ cents and in Minneapolis, 47.9 cents. The greater difference between the per capita charges and the per cent of total expense in the two cities is due to the fact that while Minneapolis has 1.57 hydrants per 100 inhabitants, Duluth has only 1.16 per 100 inhabitants, or only 73.9 per cent as many hydrants as Minneapolis, relatively to population. St. Paul has 1.46 hydrants per 100 inhabitants.

Water used for street sprinkling, sewer flushing, public buildings, etc., is paid for at "regular rates." The water pumped daily for 1913 in Duluth average ninety-four gallons per capita as compared with fifty nine in St. Paul and seventy-nine in Minneapolis.^a

A comparison of the amount paid by the city of Duluth with that paid by Superior just across the lake again seems to indicate an unusually high rate in Duluth. The private plant in Superior charges only fifty dollars per hydrant and water for street sprinkling, sewer flushing, and public

a. Reports already referred to.

buildings is furnished free of charge. However, this difference in the amounts paid by the cities for water is probably more than made up by the difference in rates to private consumers. The meter rate in Duluth varied (1913) from three-and-one-third cents to twenty-three cents per 1,000 gallons.^a There was no reduction from the maximum except for all over 60,000 gallons used per month, which would mean that practically all consumers were paying twenty-three cents. Water furnished at flat rates was charged for at the rate of \$6.50 for a six room house or including bath and water closet \$10.50. The meter rate in Superior varied (1912) from 6.44 cents per 1,000 gallons for all over 750,000 gallons per month to 50.5 cents per 1,000 gallons for any amount less than 1,875 gallons per month. The flat rates were: for a six room house \$6.40, and including bath and water closet, \$14.40.

Mr. D. A. Reed, manager of the department in his report concerning the 1913 and the proposed rates says: "With a total population of 85,000 and a distribution length of over twenty miles, a maximum elevation of 870 feet, to

a. The rates in force in 1914 varied from 11 cents to 20 cents per 1,000 gallons. All over 20,000 gallons being charged for at 8 cents per 1,000 gallons.

which the water has to be raised, and the large proportion of rock excavations in trenches, as well as the large bonded debt and heavy interest rate, and the small ratio of consumers per mile of mains (70), (Minneapolis has 92.4 and St. Paul 93.6), it is surprising that the rate can be made so low."

Concerning the water works the report for 1914 says: "By examination of the statement of the water income account it will be noted that every possible expense in the operation of the department is accounted for, and that a net surplus or income is realized of \$98,796.47. This is after paying all operating expense; including interest on bonds and making an allowance of \$50,748.00 for depreciation. This yearly surplus, if continued for a period of 23 years, and invested at 4 per cent, interest will completely retire all present indebtedness of the department." This is allowing for depreciation at almost exactly $1\frac{1}{2}$ per cent.

Duluth Gas Works.

The report shows the total earnings of the gas works to be \$256,862.44 and total operating and maintenance ex-

pense, not including depreciation, \$183,804.91. This leaves the net operating revenue \$73,057.53 and with certain deductions amounting to \$1,029.12, the gross income is \$72,028.41.

It is suggested in the report that two per cent "should be ample for depreciation."^a Depreciation figured at 2 per cent amounts to \$21,463.16. This leaves a surplus of \$49,565.25 or about 4.61 per cent of the value. The interest on bonds amounts to \$37,855.62. The net profit on the gas plant thus appears to be \$11,709.63.

The heavy indebtedness and hence heavy interest charges are due to the great development of the gas plant since the city took it. All surplus earnings have been put into extensions. In 1899 there were in Duluth 29 miles of main and 1111 meters, and the annual sale of gas was about 20,000,000 cubic feet.^b According to the 1915 report of the Public Utilities Commission there are now 148.1 miles of main^c, 9000 consumers and the annual sale aggregates 300,000,000 cubic feet. In 14 years the miles of main have been increased 5 fold, the number of consumers 8 fold and the output 15 fold.

a. Duluth does not own the generating plant and for this reason depreciation would be less.

b. W.C. Joerns - Annuals of the American Academy of Political & Social Science, Jan. 1906, Vol. 27, #1, p. 225.

c. 15th Annual Report of the Water & Light Dept. of Duluth p. 46.

In a little booklet "Regulation of Public Utilities in Wisconsin" published March, 1914, by the Minnesota Home Rule League, the following statement is made: "In its report on the Superior situation, the Commission (Wisconsin Railroad Commission) attempts to justify this claim by an analysis of the Duluth gas report. After making its own arbitrary allowance for depreciation, lost taxes and additional interest, the commission found the extraordinary book deficit, on the 1912 operations, of \$1,092." According to the report for 1913 of the Water and Light Department of Duluth, the Gas Department was under charged about \$10,000 in 1912 for rent, office salaries, and general office supplies and expenses. This amount being made up from the Water Department.

The report of the gas plant for 1914 states that after allowing for "all operating expenses interest upon bonds and depreciation" the "net income or surplus for the year is \$7,646.85."

Class II.

Of the three cities having between 10,000 and 50,000

inhabitants, which have submitted their financial statements, two, St.Cloud and Stillwater, own water plants and one, Virginia, owns a water plant, a gas plant, and an electric plant.

The water department in St.Cloud earned during the year March 1912 to March 1913 5.58 per cent on the value of the plant, and 6.11 per cent on the city's equity. Although the department earned only a fair income on the value of the plant, the city paid for water and fire protection, 47.4 per cent of the total expenses connected with the department. The rates, which vary from eleven cents to twenty-six and two-thirds cents are apparently high for cities of 5,000 inhabitants and upward. Further analysis of the situation in St.Cloud throws some light on the situation. In the first place although the city pays 47.4 per cent of the total expenses the per capita tax for this purpose is less than eighty cents and the hydrant rental is only thirty dollars per hydrant per annum. One reason why rates are so high and the amount paid by the city so large a percentage of the total expense is that the number of consumers as compared with the total population is particu-

larly small. There are in Minneapolis, St. Paul and Duluth, respectively, 15, 15.2, and 11.7 consumers for 100 inhabitants and in St. Cloud less than ten. The average number of consumers per 100 inhabitants for all cities of over 10,000 and under 50,000 inhabitants is 13.5.

There are apparently two causes for the small number of consumers in St. Cloud. First, the city had a bad typhoid epidemic a few years ago and the people have not yet acquired a great deal of confidence in the department as a result, although all necessary precautions seem to have been taken against a recurrence of the fever thru impure water.

Secondly, the city is underlaid by a very superior quality of water and a great many of the inhabitants prefer to use their own wells.^a

The water department of Stillwater seems to be operated very successfully. The plant earned in 1913, 8.44 per cent on its value and 21.1 per cent on the city's equity. The city's equity, however, amounts to only \$30,000. The

a. Dr. John J. Gray in his Report to the Civic Federation says that the failure of the old water company in Indianapolis was due in part to a situation similar to this. National Civic Federation Report, Part II, Vol. I. p.10.

city pays forty dollars per hydrant and for all purposes thirty-seven per cent of the total expenses connected with the plant.

One rather unusual feature of this water department is that all water is furnished at flat rates. A considerable part of the city is supplied by a gravity system. However, none of the water so furnished is used for domestic purposes. The rate on a six room house is \$5.60 per annum and including bath and water closet, \$10.40.^a

The city of Virginia purchased the water and electric plants in that city in 1913 and began operations October 1, 1913. The plants, including "considerable property" cost the city \$544,200.28, and since that time additions and extensions have been made to the extent of about \$100,000. The present bonded indebtedness of the utilities is \$430,000.

The total operating expenses for the first year were \$66,406.31, and the total income from the plants was \$164,051.03. This would seem to indicate that the plants earned about 18 per cent on their value at the beginning of the year. The large amount earned can scarcely be accounted for either because of the rates or because of what the city pays in support of the plants. The electric rates are 6.3¹/₂ cents for

a. This rate was reduced 10 per cent for 1914.

light and 4.5 cents for power. The lighting rates are the lowest in the state. The water rates, 11 cents to 26 $\frac{2}{3}$ cents and (flat) \$6.00 to \$12.00, seem to be much higher than necessary. The city pays "7 cents straight" for electricity and \$109 per hydrant. The hydrant rental includes cost of water actually used by the city for all purposes and the amount paid per capita is about 78 cents, based on a population of 14,000. The apparent success of these plants is further indicated by the fact that there were added during the year 415 new consumers of electricity or 22.5 per cent of the total number at the beginning of the year and 186 new consumers of water or 11.5 per cent of the total.

Mr. A. E. Bickford says concerning the gas plant which has just been completed in this city: "The city is just now about to put gas into the gas mains for the first time as the plant has been under construction during the fall and winter months. The cost will be about \$55,000.00 and it is expected that about 400 consumers will be furnished on the first placing of the gas in the mains.....The gas will be furnished at the rate of \$1.25 per thousand feet, by meter, with ten per cent off for cash within 10 days of receipt of bill."^a

a. Letter written Dec. 18, 1914.

Class III.

Of the cities in the class having from 5,000 to 10,000 inhabitants, the reports of which have been examined, four had water works only and four both water and light - the report of the water department in Fergus Falls has not been examined.

The four cities^a having water works only showed earnings of from .6 per cent in Red Wing to 10.2 per cent in Owatonna. The amount paid by the city varied from 27.5 per cent (for hydrant only) in Red Wing to 64.5 per cent in Owatonna and from \$25.00 per hydrant per annum in Albert Lea to \$50.00 per hydrant in Owatonna.

The only plant apparently losing money is Red Wing. The water department in this city showed a loss of \$2,962. It is impossible to account for this loss from the imperfect and incomplete data at hand. The amount^{paid} by the city appears to be sufficiently high and the rates to individuals are near the average for cities in this class.

The three cities^b having both water and light plants,

- a. Albert Lea, Owatonna, Bemidji and Red Wing.
- b. Austin, New Ulm and Two Harbors.

show earnings of 9.59 per cent for Austin; 10.7 per cent on light, and 4 per cent on water for New Ulm; and 11.1 per cent in Two Harbors for both departments on the combined value. In most of the cities it is not possible to determine just what per cent. of the total expense the city pays for water, but in no case does it appear to be excessively high. The total tax for both water and light in Two Harbors is \$1.00 per capita, in Austin \$1.70, and New Ulm about 40 cents per capita for water only.

The electric light plant in Fergus Falls earned 12 per cent on its value or 15.3 per cent on the city's equity in 1913. The city owns the distributing system only, the current ^{being} bought from the Ottertail Power Company, and ^{to} furnished the consumers at 7½ cents.

Class IV.

Of the 12 cities in this class given in the table, page 204, eleven have both water and electric plants. The water and light reports of four of these cities have been separated. These four cities show earnings on their water plants of 7.11 per cent, 6.9 per cent, 4.73 per cent and .8 per cent. These cities paid 32.6, 116.2, 27, and 40 per

cent respectively of the total expenses of the ^{water} plants. ^{The} earnings on their electric plants amount to 23.5, 16.2, 17, and 9.2 per cent.

Sauk Center, which owns its water plant only shows earnings of 11.2 per cent, the city paying 39.5 per cent of the expenses. The most interesting point in this report is the very small amount spent for labor. The pumps of the water plant are run by electricity bought from the Central Minnesota Milling and Power Company, and the expenditures for labor was only \$360 for the year. Apparently only one man is used by the department and since he is both Superintendent of the WaterWorks and Street Commissioner, only half of his salary comes from the water department.

The cities combining the water and light reports show earnings varying from 4.32 per cent to 18.2 per cent, only one city earning more than 9.9 per cent on its plants. This city is Litchfield. In addition to the water and light plants, it owns a steam heating plant. The city seems to be remarkably successful in operating its public utilities. It is practically impossible to so separate these reports as to determine what part of the total water expense is paid for by the city.

Class V.

Of the five cities in this class which have reported, four own both water and light plants, and one water only. The reports of the four cities owning both utilities can not be separated. Three of these cities^a show earnings of 14.4 per cent, 9 per cent, and 6.3 per cent on the value of the plants. The other city, Barnesville, shows a loss of about \$750 on plants, water, light, and telephone, valued at \$37,881.37. The city pays no rental on 17 hydrants.

Glencoe which owns only the water works shows a loss of 6 per cent, or \$1,250 on the value of the plant. Here again we find the city paying no rental whatever for 40 hydrants.

Class VI.

It has been found very difficult to get any information from cities having less than 1,000 inhabitants and as a rule, it is impossible to make anything out of the reports. Painesville in this class has both water and light and shows a profit of 6.2 per cent. Mahanomen with a plant

a. Breckenridge, Madison and Warren.

(electric) costing \$7,000 shows a profit of \$2,612, or 37.4 per cent.

Gas Plants.

Up to this point nothing has been said of gas plants except the one in Duluth. Of the municipal gas plants in the state, only four are located in cities of over 1,000 inhabitants and it has been practically impossible to get data on three of these. The statement of the gas plant in Elmore shows a loss of \$360 on a \$6,000 plant. The other small cities owning their own gas plants seem scarcely to be making them pay. Lamberton reports (Dec. 29, 1914) that their gas plant has ceased operations and that a private company will furnish electricity. As before mentioned, the municipal gas plant in Monticello ceased operations a short time ago.

Summary!

In conclusion attention is called to the following facts concerning the public utility plants studied.

Apparently in but one instance^a, regardless of the size of the city, have we found the combined water and light plants earning less than 4.32 per cent, and in one case it has been as high as 18 per cent and in still another

a. Barnesville lost 2 per cent.

15.4 per cent. These earnings cannot be attributed to the fact that they have received an undue amount of aid from the city. In finding the earnings of the plants both depreciation and interest have been charged to the plant. The depreciation has been figured much higher for most of the plants than is usually considered necessary. At the same time it can probably be said without any fear of contradiction that practically no one of these cities is paying an exorbitant amount for the water or electricity it uses or for fire protection. The current is apparently supplied at low rate in most cities and in a number of cities no charge whatever is made for hydrant rental and in only two, Virginia and Duluth, does it appear especially high. In the cities operating both plants but keeping the accounts separate, the earnings on the lighting plants have varied from 10.7 per cent to 17 per cent, while at the same time the water plants have earned from .8 per cent to 7.11 per cent, 3 out of 4 earning less than 5 per cent. The cities owning water works only show earnings varying from six per cent less than nothing in Glencoe to 10.2 per cent in Owatonna.

Practically every lighting plant and probably every combined water and light plant is earning a rate of interest equal to or greater than that paid on the city bonds. A large percentage of the cities owning water works only show earnings of less than 5 per cent and 3 of the small number listed show actual losses.

It seems safe then to say that at the present rates, interest payments and estimated depreciation; the municipal electric plants in the state are on a sound financial basis and actually earning some money above all expenses. On the other hand many of the water plants are doubtlessly not earning enough to pay interest on their indebtedness, provide for depreciation, and meet running expenses. This is, undoubtedly due in most instances to the fact that the city pays nothing or less than the actual cost of fire protection and for water used. The amount spent by the city for interest bond retirement, and for protection and water used probably seldom equals the cost of these last two items. Very rarely do cities owning both water and light or light plants pay any interest on such public service bonds. It will be noticed from the table that in but three cities does the amount paid the water department

by the city exceed 50 per cent of the actual expense and in the majority of cases it is much less than 50 per cent. The amount that the city pays for electricity and also for water will be given some consideration in the chapter on rates. It is hoped ^{that} this will give value to the present chapter. It does not mean much to say that a plant is earning or losing money without some knowledge of rates and vice versa. However, after having studied the first proposition both in the discussion of the Tax Commission Report and the above division of this chapter, it should be possible ^{through} a study of rates to come to some approximate conclusion of value as to the financial operation of publicly owned public utilities in Minnesota.

II.

CITY.	POPULATION	Kind Of Plant.	Value Of Plant.	Cost of Operation and maintenance including Depreciation.
Staples	2,558	Water	77,500.00	18,496.27
		Electricity		
		Water	67,042.59	5,910.17
East G. Forks	2,533	Electricity	54,788.32	12,009.80
		Water	19,400.00	
Worthington	2,385	Electricity	20,324.67	
		Water		
		Heat	54,830.44	16,249.24
Litchfield	2,333	Electricity		
Sank Center	2,154	Water	15,000.00	5,758.00
		Water		
Marshall	2,152		48,056.73	20,015.36
		Electricity		
		Water	66,725.57	8,588.23
Breckenridge	1,840	Electricity	37,438.00	17,285.60
		Water		
Madison	1,811		40,108.90	11,688.07
		Electricity		
Glencoe-	1,788	Water	25,000.00(10)	2,112.06
		Water		
Warren	1,650		47,935.85	14,412.45
		Electricity		
		Water		
Barnesville	1,353	Telephone	37,881.37	8,641.05
		Electricity		
Buffalo	1,227			
Janesville	1,173			
		Water		
Paynesville	901		12,000.00	4,628.14
		Electricity		
Mahnomen	796	Electricity	7,000.00	4,387.90
Elmore	522			
Howood	795	Gas	6,000(11)	2,758.49
Fergus Falls		Electricity	64,163.71	19,789.38

9. Sup. and general manager of light plant also street commissioner
 Only one man employed.
 10. Original and also present indebtedness.
 11. Original bonded indebtedness.

Income From Operations.	B O N D S.	Percent of Expense for Fuel	Percent of Expense for Labor	Percent of Expense of Water by City	Earned on Value.
23,618.89	66,000.00				6.6
9,082.62	50,000.00	16.1	39.8	27	4.73
21,387.40					17.
26,222.59	10,500.00	54.7	25.1		18.2
3,964.37	None	51	3 (9)	39.5	11.2
24,097.07	25,000.00		22.5		5.14
5,156.07	42,798.00	16.8	27	35.4	
11,876.77	13,500.00				14.4
15,383.77	25,000.00	45.1	28		9. loss
2,045.05	25,000.00			None	5.3
17,425.64	14,000.00				6.3
9,554.83	30,000.00	39	47	4.4	loss 2.
5,367.78	12,000.00	47.8		40.7	6.2
9,307.69	7,000.00				
2,396.40	None		11.6	13	6.1loss
27,491.66	30,000.00				

CITY	POPULATION	Kind Of Plant.	Value Of Plant	Cost of Operation and maintenance including Depreciation.
Minneapolis	302,000	Water	\$8,792,175.00	414,760.04
St. Paul	214,000		4,479,599.00	226,747.64
Duluth	78,465	Water	3,104,687.00	128,722.49
St. Cloud	10,600	Gas	1,073,158.00	256,862.44
Virginia	10,473	Water	148,090.00	13,982.11
Stillwater	10,198	Water	643,685.00	66,406.31
Redwing	9,048	(Electricity)	150,000.00	15,440.55
Austin	6,960	Water	199,485.89	17,700.22
Albert Lee	6,192	Water	281,699.34	41,597.12
Owatonna	5,658	(Electricity)	175,000.00	11,749.16(3)
New Ulm	5,648	Water	100,000.00	7,210.00
Bemidji	5,099	Water	118,986.61	9,406.12
Two Harbors	4,990	(Electricity)	72,258.44	24,032.84
Moorhead	4,840	Water	60,000.00	4,229.51
St. Peter	4,176	Water	113,193.24	26,841.13(4)
Willmar	4,135	(Electricity)	186,500.91	11,195.10
Alexander	3,001	Water	41,913.94(7)	2,578.29
Detroit	2,607	(Electricity)	32,935.71	12,122.77
Melrose	2,591	Water	110,456.84	21,662.52
		(Electricity)	102,288.86	4,120.79
		(Water)	94,515.09	11,258.77
		(Heat)	47,736.49	19,343.53(8)
		(Electricity)		10,640.67

1. This is hydrant rental only - There is no charge for street sprinkling and flushing but there is an extension frontage tax.
2. Not including \$2789.34 paid to plant as its apportionment of taxes.
3. Depreciation at 2½ per cent on value.
4. Depreciation as per statement-3 per cent on total value.
5. This is equal to \$5,000 what city allows department for water and light

Income From Operations.	B O N D S.	Percent of Expense for Fuel	Percent of Expense for Labor	Percent of Expense of Water by City	Barned on Value.
742,728.17	2,500,000.00			32	3.73
349,786.81	2,200,000.00			16.6(1)	3
	2,542,145.00				6.6
326,105.66					4.61
207,297.19	882,000.00		18.3	47.4	5.58
22,257.68	70,000.00	17.9		52.7	15.4
164,051.03(2)	430,000.00				
27,553.47	115,000.00	12.4	39.4	37.1	8.44
18,925.78	95,000.00	19.5		32.7	.6
68,611.38	30,000.00	42.6	47	49.6	9.59
23,593.84	40,000.00	25.5	26.1	31.8	6.76
17,127.02	31,000.00	34.8	28.7	64.5	10.2
14,146.73	30,000.00				4.
31,311.16	60,000			36.1	10.7
8,518.99	54,000.00	32.7	31.3	18 (5)	7.1
39,414.87		28.6	34.77	32.6	11.1
18,018.56	(6)	44.3	30.4	116.2	7.1
44,032.66	40,000.00	42.3	40		23.5
5,370.47	47,000.00	36	34.7		6.9
17,464.89		31.6	35.5		16.2
26,433.76	33,000.00	34.6	28.2		4.32
4,520.92	60,000.00	37.4	27.8	40	.8
15,951.89.00	38,000.00	33.5	50		9.2
28,728.54		37.8	30.6	31.8	9.9
13,352.35	22,400.00				5.2

6. The city has assumed the debt because plant has paid off some city bonds. The city has bought up all but \$5,000 of the bonds.

7. 5 per cent is written off value of plants each year for depreciation.

8. Depreciation as allowed in report - \$2,400.00.

Chapter VI.

RATES.

The writer is fully aware of the futility of comparing rates charged by plants in different cities, without a great deal of additional information. There is always, and first of all perhaps, the question of the conditions under which the plants operate. One water plant must pump water to a great height while another gets it wholly or in part through gravity; one must dig trenches through a rocky subsoil while another has only soft earth through which to dig; one takes its water from a lake of pure water, while another gets it from a dirty river and must of necessity go to more or less expense for a filter; one city gets its water near at hand, another at a distance of several miles. In lighting plants, as well as water plants, the source of the power for operating pumps and machinery and the cost of fuel are important considerations. All these items must be allowed for in fixing rates and there are sure to be great variations in different plants.

While all these things should be given due consideration in a comparison of one plant with another, or the determining of rates for any one plant, it may be less necessary to do so when comparing a large number of plants located in a fairly homogeneous and contiguous territory.

Whatever may be said about the difficulty of getting anything definite from a comparison of rates it must be admitted that perhaps aside from service rates are worthy of more consideration than any other single factor. Mr. Koerner, above referred to, says "contentions over rates are at the bottom of most of our public utility disputes. The price paid for electricity, gas, etc., is a tax collected monthly instead of at the end of the year. We all agree that service should be A-1 and reasonable in price."^a

Since in Chapter V we have made an effort to determine the profit made by municipally owned plants without any regard to rates, except in the first part of the chapter where rates to municipalities are allowed for, it may be of some value to compare rates where plants are municipally owned with rates where the plants are privately owned.

a. Annals of the American Academy, Jan. 1914, page 225.

Most of the data upon which the following discussion is based are taken from the report of the Municipal Reference Bureau of the University of Minnesota on Minnesota Public Utility Rates for 1913, and the report of the Railroad Commission of Wisconsin on Water Rates for 1912.

First a word as to the method pursued in the discussion. The highest and lowest rates only have been considered. The highest rate is taken as the maximum and the lowest as the minimum. When the statement is made as, e.g., "The power rates are 7 cents and 2.5 cents" the first rate refers to the maximum and the later to the minimum rate. In order to avoid confusion when there is but one rate given this is spoken of as the maximum rate and all averages of maximum rates include a rate for every plant whether or not it has more than one rate.

With the exception of the larger cities, including those cities in class 2, a large proportion of the current used is for lighting purposes and is paid for at the maximum rate. Very few ordinary consumers of current for

lighting purposes probably use enough to get any other than the maximum rate. This would appear to be true since the average amount that must be used before advantage can be taken of the rate just below the maximum, is 30 kilowatts per month. The same is doubtless true to a considerable extent of current used for power. A number of plants have stated that practically the only rates actually in use are the maximum rates. For these reasons it has seemed best to lay particular emphasis upon maximum rates rather than upon minimum rates. It is impossible to say with exactness how much current the average family uses but from an examination of the flat rates in force, it would seem that the amount could not be less than 20 kilowatts per month. The average minimum rate is about \$1.00 per month, and since this is supposed to be of value only during a few months of the year, the average amount of current used during the rest of the year is presumably in excess of this amount. At 10 cents per kilowatt, the cost to the consumers of 20 kilowatt, would be \$24.00 annually. The total value of current sold exclusive of that used for municipal

purposes in a number of plants where this has been worked out, varied from \$21.60 in Litchfield to \$38.00 in Virginia.

The average flat rate per light per month for 30 plants, making such rates is, 56 cents. The lamps vary from 40 to 75 watts, and 16 to 32 candle power.

Very little electricity is furnished at flat rates and hence such rates are not discussed here. The flat water rates vary greatly, some of the water rate schedules covering two or three pages and covering almost every possible use. An attempt has been made to reduce these rates as far as possible to a uniform basis. To represent the ordinary consumer or perhaps those in the more modest homes the rate per dwelling has been figured on the basis of six rooms.* The rates for bath and water closet are given separately. This plan is very much like that used by Mr. E. W. Bemis in his discussion of rates in his chapter "American Conditions" in the National Civic Federation Report.^a When the water rates are given as, e.g., \$4 and \$8 this means that the rate per dwelling is \$4 and when bath and water closet are included \$8.

a. National Civic Fed. Report op. cit. Part I, Vol. I, p.150

A. Electric Rates.

The large and almost equal number of publicly and privately owned electric light plants in this state make possible rather definite comparisons. The comparisons must for the most part be confined to cities of less than 10,000 population since but one city, Virginia, having a population of over 10,000 owns its own electric light plant.

Class II.^a

The rates in Virginia are 4.5 cents^b for power and 6.3 cents for commercial and private lighting. The average maximum lighting rate in the cities of this class which are supplied by private plants is 10.6 cents and the minimum 3.5 cents. The average power rates are 7 cents and 2.5 cents.

Not only is the maximum rate in Virginia but 59.4 per cent of the average for the ten cities having privately owned plants, but in no one of these ten, is the rate so low as 6.3 cents. The lowest maximum rate in any one is 9 cents. The minimum rates are lower than the rates in Virginia. The minimum monthly charge in three

a. The only municipally owned electric plant in this class is Virginia.

b. The rate refers to a kilowatt hour.

of the cities having private plants are, in two cases, \$1.00 and in one case 74 cents. Virginia and Stillwater have no monthly minimum.

Although three of the four privately owned plants generate their current in whole or in part by water power, all the current furnished by the plant in Virginia is generated by steam. The plant here seems also to be making a good profit as shown in the Table page 204.

The charge for current furnished the city in Virginia amounts to about \$1.63^a per capita while the average in the cities having privately owned plants, is only 73 cents. This difference of 93 cents is very material and in a large measure may account for the low rate to private consumers in Virginia. However, a further analysis would make it appear that this is not altogether the case.

If 20 kilowatts represent the average monthly consumption per consumer,^b it should be possible to estimate the saving per capita because of difference in rates. This estimate has been made for Virginia only, chiefly for bringing out the method.

The per capita consumption of all persons served by

a. Current is furnished at 7 cents per kilowatt.
b. See page 209...

the light plant would presumably average about 50 kilowatts per annum.^a This would mean, since 63.3 per cent of the inhabitants of Virginia are served directly by the light plant, that the average amount of current used for lighting purposes, exclusive of street lighting, is about 32 kilowatts per annum per inhabitant. This would seem to indicate a saving because of the difference of the maximum rates in Virginia and the other cities of \$1.38, which more than offsets the difference of 93 cents in the amount paid by Virginia and the other cities.

The question may now be raised as to the amount of current used for power and the significance of varying rate schedules. It has been impossible to come to any very significant conclusion from the data at hand. Of 7 plants reporting, the value of current sold for power varied from 2.6 per cent to 20 per cent of the total amount of current sold. None of the seven plants are located in cities of less than 1,800 and only one is in a city of less than 2,300. A large number, especially of the smaller plants, report that little current is sold for power and in some instances that the minimum rates are almost non-effective.

a. This assumes that the average consumer represents a family of 5 persons - the average size of a family in Minnesota according to the last census.

Class III.

Comparisons of rates in cities of this class should be much more valuable than in the class just discussed. This is true for two reasons: first, there are more plants both private and municipal; and second, since the cities are smaller, maximum rates probably play a more important role as does also the current used for lighting as compared with current used for power.

The average maximum rate for lighting in cities owning their own plants is 7.1 cents, and the average minimum 7 cents. The average power rates are 5 cents (for 5 cities) and 3.6 cents (for 4 cities). The average monthly minimum charge is 64 cents. It is almost impossible to know exactly what the average cost per capita for light used by the city is, but it probably is not over 80 cents.^a

Averages for rates in the private plants show the lighting rates to be 11 cents and 5.5 cents and the power

a. This would appear to be true because of the average for the cities giving the total and because of the low rate to the cities where the rate per kilowatt is given. The average in Austin is 95 cents, and in Two Harbors about 50 cents (\$1.00 for both water and light). The rates in the other three cities giving the rates for the city, are 3.5 cents, 5 cents, and 7 cents. New Ulm does not state what the rate is, or whether there is any such rate.

rates, 5 cents, and 2.9 cents. The average monthly minimum is 75 cents, and the average cost per capita for 7 of the 10 cities which give the charge as a lump sum, is \$1.15 cents. The difference in the cost per capita for city light is very material in this class of cities.

We find here as before, that the average maximum rates are lower where the plants are publicly owned; in the case of light, 35 per cent, and of power, about 10 per cent. Of the ten plants only eight offer any power rate whatever and only six minimum power rates. The large consumers are favored somewhat by the private plant.

The most interesting situation found in the cities of this class is that in Crookston. The private company in this city furnishes current to a mill at the very low rate of one cent per kilowatt and according to their statement, make more money on this sale than on all the other current sold.^a The startling part of the rate schedule is that although this mill gets current at the rate quoted above, the consumer of the minimum amount must pay 15 cents per kilowatt. The city also pays the company \$6,480 or \$91.25 per 550 watt arc light, per annum.

a. This information was received by C.W.Pfeiffer in his study of the Gas Industry in Minnesota and told by him to the writer.

This amount is practically the same, population considered, as the amount allowed by Two Harbors for both water and light.

Class IV.

The average lighting rates in the cities where the plants are publicly owned, are 9.86 cents and 7 cents (15 of the 21 offer minimum rates). The power rates are 7.3 cents and 4.6 cents (13 plants offer two or more power rates). The average minimum monthly rate is 83 cents, for the 15 making any minimum charge whatever. The average per capita cost for the street lighting is 62 cents for the 11 cities giving the total cost.

For the 10 cities supplied by privately owned plants, the lighting rates are 11 cents and 7 cents and the power rates 7.6 cents, and 3.75 cents. Only 5 cities have power rates and only 4 two or more power rates. The average monthly minimum is 62.5 cents and the average most per capita for street lighting is 71.3 cents in 7 cities giving the cost.

The maximum lighting rate for municipal plants is 10 per cent less than for privately owned plants and the minimum rates are the same in both cases. The maximum power rate for municipal plants are .3 cents per kilowatt less and the minimum power rate .85 cents per kilowatt more than for the private plants. There are, however, so few private plants offering power rates that the rates here mean almost nothing.

Class V.

The average maximum rate for lighting by municipal plants is 10 cents. Only 12 of the 34 cities have more than one lighting rate. The average minimum rate for these 12 is 7 cents. The average maximum power rate for the 12 cities where power rates are quoted, is 7.5 cents. Only 5 plants offer minimum rates. The average minimum monthly charge for the 23 cities having a minimum charge, is 72 cents; for all the cities less than 50 cents. The average cost per capita for city lighting for the 15 cities giving such cost is 55 cents.

Lighting rates in the cities supplied by private

enterprise are 12 cents and 7.3 cents, only 17 cities offer 2 rates; and for power 7.8 cents, and 4.4 cents. Eleven cities have two power rates. The average minimum monthly charge is 96 cents. Of the 27 cities of this class 23 pay a stated sum per year. This averages \$1.00 per capita.

The maximum lighting rate of the municipal plants is 16.6 per cent or 2 cents per kilowatt hour less than where the plants are privately owned. The maximum power rate for municipal plants is also slightly less than for private plants. The most noticeable feature of these rates is that not only the maximum rates are lower in the cities owning their own plants, but in the case of lighting the minimum rate, is also slightly lower than where the plants are privately owned. The minimum power rate is somewhat higher, however. The extreme lighting rates where the plants are publicly owned are 15 cents and 6 cents and where privately owned 20 cents and 9 cents. The difference in cost per capita for street lighting is 45 cents.

Class VI.

The average lighting rates of the municipal plants in the 21 cities of this class is 11.4 cents. There are but very few places where either two lighting rates or any power rate whatever is given.

Average rates in the cities where the plants are privately owned are, for lighting 12.5 cents, and for power 7.6 cents. About 25 per cent of the plants offer two lighting rates and a few less offer two power rates. Less than half the plants offer any power rates whatever.

Of the 24 municipal plants, 14 make minimum monthly charges, *averaging* 76 cents. A similar average for 17 private plants is 94 cents. The per capita cost for street lighting where the plants are municipally owned is 87 cents and where privately owned \$1.16, a difference of 29 cents per capita.

From a survey of the facts just presented, it is seen that in practically every instance the consumer who uses current for lighting dwellings gets it at from 1 to 5 cents less per kilowatt when supplied by a public plant.

On the other hand, the very large consumer of either light or power gets it at a somewhat lower rate from the private plant. This last factor is reduced to a minimum in most of the smaller cities.

While the rates made by municipal plants show considerable inverse variation with the size of the city in which the plant is located, the rates made by privately owned plants show much less relation to the size of the city.^a This is not true for power rates. The maximum lighting rates for the municipal plants beginning with the cities of the sixth class are : 11.4 cents, 10 cents, 9.86 cents, 7.1 cents, and 6.3 cents. Similar rates for private plants are 12.5 cents, 12 cents, 11 cents, 11 cents, and 10.6 cents.

The average lighting rates in Wisconsin cities is shown on page 342. The average rates in Iowa cities of less than 10,000 are as follows: In 16 municipally owned plants the maximum rate was 11.62 and in 12 of these the minimum rate 6.75 cents. The maximum rate in 22 cities where the plants were privately owned was 14.65 cents and the minimum, in 12 cities 6.9 cents.^b

a. See Diagram Pages 38 and 339

b. Reports Municipal Accounts - Iowa 1914, Averages made by the writer.

The relation of the rates are shown by diagram on pages 339 to 342.

B. Water Rates.

Perhaps enough has already been said concerning the water rates in the three cities of the first class hence this part of the discussion is confined to the cities of the state having less than 50,000 inhabitants.

Class II

The 5 cities in this class all own their own water-works. One of these cities, Mankato, furnishes water only through meters. Stillwater consumers all pay a flat rate, and the consumers in the other three cities are furnished water at either flat or meter rates. About 36 per cent of all water connections are metered. The average meter rates, maximum and minimum are, 21 cents, and 8.5 cents. The average flat rates, one faucet connection, and including bath and water closet, are \$4.66 and \$10.73. Two of the cities, Mankato and Winona pay nothing directly for hydrant rental or water used by the city.

a. Rate given in cents per 1,000 gallons.

The per capita payment in the other three cities averages 98 cents, the highest being \$1.15 in Stillwater and the lowest 61½ cents in St. Cloud. It will be recalled that these two cities are earning 8.44 per cent and 5.58 per cent respectively upon the cost of the plants to date.

The average population of eight Wisconsin cities of this class that have privately owned plants is about 24,000 as compared with 12,000 for the Minnesota cities. It is generally conceded that as the size of the city increase, the rate should decrease.

The average meter rates in 7 of these cities, are 32 cents and 7 cents and the average flat rates \$6.00 and \$14.14. The average hydrant rental per annum is \$47.44, while for the Minnesota cities it is \$28.82. Not only is the average maximum rates in these plants 50 per cent higher than in the Minnesota cities, but in only one city, Green Bay, is the lowest maximum rate so low as the highest maximum rate in the Minnesota cities. The Wisconsin flat rates are, however, very near the average rates for a large number of privately owned plants in different sections of the country. The average rates for 162

privately owned plants in cities averaging 25,437 inhabitants, were \$6.83 and \$14.40. The average rates for 213 publicly owned plants in cities averaging 85,382 inhabitants, were \$6.04 and \$12.15.^a

Class III.

Of the 16 cities in this class, including Two Harbors which has 4,990 inhabitants in 1910, 13 own their own water works. Average meter rates in the 10 cities quoting such rates were 31.1 cents and 10 cents per 1,000 gallons. The average flat rates for six cities were \$6.33 and \$11.73. The average hydrant rental was \$32.25 for the 13 cities. Three of the cities pay nothing as hydrant rental or for street sprinkling. Two Harbors, although listed as charging nothing makes an allowance on the books of its Water and Light Department of \$5,000 for city light and water. The rate for the 9 cities actually paying hydrant rent and for water used is about \$42.16 per hydrant. Meter rates in Crookston and Little Falls, two cities supplied by private plants^b were 50 cents and 30 cents respectively, the minimum rate being 8 cents, and 5 cents. The Flat rates in Little Falls were \$8.00 and \$18.00.

a. Report to the Mayor and City Council on Water Rates for the Plant belonging to the Peoria, Ill. Water Works Co., Sept. 8, 1910, page 68.

b. The rates in Rochester which is also supplied by a private company are not given.

The minimum monthly bill where meter rates are used was \$1.00.

The Meter rates in the 6 Wisconsin cities of this class that were (1912) supplied by privately owned plants were 32.5 cents and 11.7 cents; The flat rates were \$6.50 and \$14.50, and the average cost per hydrant was \$48.66. The average cost per capita for four of these cities, which give the total amount paid by the city, is \$1.26 as compared with less than 50 cents in the Minnesota cities.

Class IV.

Of the 30 cities in this class, only 3, Cass Lake, Hutchinson and Proctorknott, were supplied by privately owned plants.

The average meter rates for ^{of these} 23/cities were 33.3 cents and 14.8 cents. The Maximum meter rates varied from 15 cents in West Minneapolis to 65 cents in East Grand Forks. One rather unusual feature of the rates in this class is that only about one in five of the plants offer any flat rates and only one plant, Alexandria has flat rates only. Almost half of the

plants, make minimum charges ranging from \$4.00 to \$16.80, the averaging ~~ing~~ \$6.28 per annum.

The average rental per hydrant in 16 of these cities is about \$46.00 and the total cost per inhabitant for 20 cities is about 44 cents.

The Average meter rates for four of the 7 Wisconsin cities supplied by privately owned water works were 38 cents and 11.5 cents, and flat rates, given for all seven \$6.30 and \$14.33. The average hydrant rental was \$74.00 and the average cost per capita for 3 cities was 1.35.

Class V.

Only 2 of the 58 cities in this class are supplied by privately owned plants. The average meter rates for 41 cities were 36.8 cents and 18 cents. And the flat rates were \$6.50 and \$8.10. The highest meter rate for any city was 80 cents in Wheaton. There were 12 cities having meter rates of 50 cents or over, most of these rates, however, being exactly 50 cents. Only about one-third of the schedules indicate that ~~any~~ ^{hydrant} rental is paid

plants, make minimum charges ranging from \$4.00 to \$16.80, averaging \$6.28 per annum.

The average rental per hydrant in sixteen of these cities is about \$46.00 and the total cost per inhabitant for 20 cities is about 44 cents.

Average meter rates for four of the seven Wisconsin cities supplied by privately owned water works were 38 cents and 11.5 cents and flat rates, given for all seven, \$6.30 and \$14.33. The average hydrant rental was \$74.00 and the average cost per capita for three cities was \$1.35.

Class V.

Only two of the 58 cities in this class are supplied by privately owned plants. The average meter rates for 41 cities were 36.8 cents and 18 cents, and the flat rates \$5.50 and \$8.10. The highest meter rate for any city was 80 cents in Wheaton. There were 12 cities having meter rates of 50 cents or over, most of these rates, however, being exactly 50 cents. Only about one-third of the schedules indicate that any hydrant rental is paid

to the plants and nearly one-half state that there is no charge whatever against the municipality for water or fire protection. By far the highest per capita cost to the city is in Coleraine where the plant is privately owned, the charge in this city, being about \$2.00 per capita or nearly twice that of any other city, and about six times the average for the whole class. It is impossible to compare these rates with those of privately owned plants outside the state for lack of proper data.

Class VI.

Meter rate in the 45 cities in this class averaged about 37.3 cents, the extreme rates being 7 cents and 97 cents. The irregularity in rates is really less than would appear from these figures since over 50 per cent of the rates lie between 25 and 40 cents. The flat rates for 22 plants average \$5.60 and \$7.77; the highest being \$1.00 per month, which is the rate in Browerville. Fourteen of the schedules for plants in this class state that no municipal charge is made and only 9 specify any charge. There is one hydrant to every 48 people in these cities.

The average meter rate for 5 privately owned plants in Wisconsin was 41 cents, the highest rate being \$1.00 per 1,000 gallons in Milton Junction. The flat rates averaged \$.60 and \$10.80.

A brief summary of rates just given seems to show that the rates made by municipally owned plants are generally somewhat lower than the rates made by the privately owned plants. This difference is especially noticeable where flat rates are in effect. The most pronounced difference in the charges made by the two kinds of plants is the amount charged directly by the city for water used and for fire protection.

The saving to consumers through lower rates for water and light and to tax payers through low hydrant rental or free municipal service where the plants are publicly owned about equals the sum ascribable to depreciation and interest on the utility bonds. This means that even though the city paid off all debt and all interest, a thing which it by no means does, it would still be paying only about the same for its water and light as does the city supplied by a privately owned plant.

C. Gas Rates.

The largest city, excepting Duluth, that owns its gas plant is West Minneapolis. There are only two other cities, Madelia, and Renville, having a population of 1,000 or over, that operate or own their gas plants. The net price of the water gas in West Minneapolis was \$1.26 per 1,000 cubic feet and in Renville \$1.50. The price of water and coal gas manufactured by privately owned plants varied from 85 cents in Minneapolis to \$2.00 in Excelsior.^a The two municipal plants^b manufacturing acetyline gas are both located in villages of less than one thousand inhabitants. The plant in Carver, population 571, charges 90 cents per 100 cubic feet. This plant has 64 consumers. The plant in Norwood, population 522, charges 80 cents per 100 cubic feet and has 90 consumers. The only privately owned acetyline gas plant is located in Hallock. This plant sells gas at \$2.00 per 100 cubic feet.

The remaining municipally owned gas plants all manu-

- a. The plant in Excelsior went out of business Mar, 1915.
- b. The rates for the other plants are not known.

facture gasoline gas, and the price varies from 80 cents per 1000 cubic feet in Heron Lake to \$1.75 per 2000 cubic feet in Hector. The average rate is \$1.37. Of course a statement of rates without any information as to quality can be of but little value.

D. Rates to Municipalities.

(a) Electric Rates.

As suggested above it is difficult to compare the cost of electricity furnished a municipality by a private company with that furnished by a municipally-owned plant. Not only is this difficult because of the different kinds of street lamps in use and the several kinds of burning schedules but more especially because of the way in which the charge is made.

Of the 81 municipal plants listed in the report of the Municipal Reference Bureau of Minnesota, 21 charge for current for street lighting on a basis of consumption, i.e., instead of charging *by the lamp* *they* charge *so* much per kilowatt of current used. Of the 86 privately owned plants listed in this

bulletin only 4 charge for current by the kilowatt, the others charging by the lamp.

The price paid by the cities furnished by municipal plants varied from 11 cents in Wells to $3\frac{3}{4}$ cents in Rushford the average rate being 7 cents. In only one case did the rate paid by the city exceed the rate paid by private consumers. Virginia pays "7 cents straight" for current while the private consumer pays 7 cents with a 10% discount for prompt payment. The rates paid by the four cities furnished by private companies vary from 9 cents in Glenwood to 5 cents in Owatonna and International Falls.

Nine cities owning their own plants pay nothing for current for street lighting as such. No private company of course furnishes street lighting free.

There are 9 cities owning their own plants and 22 supplied by private companies that pay for street lighting in whole or in part at a certain rate per arc. The question of course at once arises as to the kinds of arcs used. This data is not at hand except for a small number of

plants but it is not improbable that they would average about the same.

About 31.5 per cent of the cities supplied by municipal plants have "all night and every night service" 25.0 per cent have "moonlight" service, ^{29.6 have "moonlight to midnight" service} and the remaining "to midnight" service. The cities supplied by private companies have service as follows: "All night and every night", 36 per cent, "moonlight" 25 per cent, "moonlight to midnight" 15 per cent and "to midnight" 23.3 per cent. The different classes of cities show wider differences in burning schedules than do the averages for the total. Of seven cities supplied by private companies and having populations of from 2000 to 5000 one only has an all night and every night service while of 10 cities having populations of from 5000 to 10,000 seven have all night and every night service. On the other hand nine out of fifteen cities having populations of from 2000 to 5000 and supplied by municipal plants have all night and every night service while only two out of five cities having populations of from 5000 to 10,000 have such schedules.

The rates per arc per annum in cities supplied by municipal plants vary from \$90.00 in Wadena to \$48.00 in Austin the average for the nine being \$67.44. Similar rates in cities supplied by private companies vary from \$120.00 in Chisholm to \$49.00 in Proctorknott, the average being \$81.17. The cities named as paying the minimum amounts are the only ones in either case that pay less than \$60.00. Although only 2 of the 9 municipal plants charge over \$75.00 per arc per annum, ten of the 22 privately owned plants charge more than this amount.

An attempt has been made to determine whether or not the cost per arc light bears any relation to the rate charged individual consumers for lighting, the burning time being considered. The small number of municipal plants listed makes any deduction of doubtful value. There does, however, appear to be some relation in these plants. With the exception of Wadena (the data of which is not very clear) the cities having part time schedules pay rates

corresponding very closely to the rates to private consumers. The three cities where the lights are burned all night pay considerable more in each case (Wadena excepted) than do the cities before mentioned.

The cities supplied by private companies show a great deal of non-conformity in the rates paid per lamp. The price paid per arc burning full time varies from \$120.00 in Chishold (these are 4 ampere magnitite constant current luminous arcs) to \$49.00 in Proctorknott. The maximum rate for lighting in Chishold is 9½ cents and the minimum 5½ cents. Similar rates in Proctorknott are 10 cents and 6 cents. Again the rate per arc in Crookston is \$83.95 and in Bemidji \$90.00 while the rate to private consumers in Crookston is 15 cents and in Bemidji 9 cents to 5½ cents. What is perhaps even more striking is a comparison of rates both within the class and with the class discussed above, in cities where the lights are burned on a moonlight schedule.

Deer River pays \$108.00 per arc and Excelsior \$70.00 per arc while at the same time private consumers in the former pay 11 cents and in the latter 15 cents per kilo-

watt. The maximum rates in Glencoe, Wheaton, and White Bear respectively are 12.5 cents, 12.75 cents, and 18 cents and the rates paid by the city per arc in each are \$72.00, \$60.00 and \$76.00. The average rate per arc in the eight cities where the arcs burn full time is \$81.25 and the average rate per kilowatt to consumers is 10.7 cents. On the other hand the average rate per arc in cities having moonlight schedules is \$77.00 and the rate per kilowatt is 11.5 cents. The difference in the rates per arc while in the direction that should be expected seem to be too slight when the burning time and rates to private consumers are considered.

It has been possible to find the total cost of street lighting in 57 cities where the plants are privately owned and in 25 cities where the plants are municipally owned. The average cost per capita in the first case is 93.2 cents and in the second case 85.4 cents. However, for cities having a population of less than 2500 the per capita cost where the plants are privately owned is 77.3 cents and where municipally owned 88.8 cents per capita.

The average cost in Iowa cities of less than 10,000 inhabitants is 91 cents per capita for 13 cities where the

plants are municipally owned and 78 cents per capita for 46 cities where the plants are privately owned.

(b) Water Rates.

It is unnecessary to discuss the amount paid by cities for water and fire protection at length at this point since it has been covered in other parts of this paper. The table on page 236 brings out the facts concerning these rates or payments. It is impossible to make any valuable comparison of rates made by privately owned and municipally owned plants due to the small number of privately owned plants in the state and also in Wisconsin.

So far as the writer can ascertain there is almost no relation between the rate per hydrant and the rate per 1000 gallons to the individual consumer.

There are 46 cities listed as paying nothing for water actually used or for fire protection, and 31 fail to state whether or not anything is paid for these purposes.

Tabulated Information Concerning Water
Plants in the Cities of Minnesota.

Population	500-1000	1000-2000	2000-5000	5000-10000	10000-50000	50000-100000
No. of Cities	45	58	30	13	5	3
Av. Population	719	1425	2918	6900	12044	198200
Consumers per 100 inhabitants	10	10	8	14.3	13.5	15.6
Av. No. of hyd.	15.9(1)	27	45.8	106	204	3182
Hyd. per 100 population	2.2	2	1.2	1.52	1.66	1.6
Av. cost per hydrant	(2)	\$33.45(5)	\$45.80(8)	\$32.25	\$66.64(13)	\$29.00
Av. Max. rate (meter).....	33.5¢(3)	36.8¢(6)	33.3¢(9)	31¢(11)	21¢	12¢
Av. Min. meter rate.....	18¢(4)			11¢(11)	8.5¢	11¢(14)
Av. flat rate (water closet and bath included)	7.54	\$8.10(7)	\$14.80(10)	\$11.73(12)	\$8.73	

Tabulated Information Concerning Wisconsin and
Minnesota Privately-owned Plants.

Population	500-1000	1000-2000	2000-5000	5000-10000	10000-50000
No. of cities	5	4(18)	8(21)	9(25)	8
Av. Population	782	1803	2900	7053	24000
Consumers for 100 inhabitants				12.1(26)	
Av. No. of Hyd.	21(15)	31(19)	59	118	
Hyd. per 100 population	2.6	1.7	1.9(22)	1.68(27)	
Av. cost per Hydrant	\$20.43(15)	\$79.10	\$64.50(23)	\$52.40(27)	\$47.44
Av. Max. Meter rate	41¢(16)	30¢(20)	33.6¢	34.4¢	32¢
Av. Min. Meter rate	33¢(17)		10¢	10.4¢	7¢
Av. flat rate (with water closet and bath).....	\$10.80	\$15.10	\$14.30(24)	\$11.70	\$14.14

Notes on following page.

Notes to foregoing page:

1. For 43 cities and villages only.
2. 14 cities answer "no charge", 18 do not answer, and 13 make total charges to the city varying from \$30.00 to \$306.00.
3. For 28 cities.
4. For 13 cities.
5. The average for the cities paying hydrant rental is \$38.41.
6. For 41 cities.
7. For 23 cities.
8. For 16 cities.
9. For 24 cities.
10. For 20 cities.
11. For 10 cities.
12. For 6 cities.
13. For 3 cities the average for the five (two charge nothing) is \$29.10.
14. Duluth only.
15. 3 cities only.
16. 4 cities.
17. 2 cities.
18. Includes Coleraine & Sandstone, Minnesota.
19. 3 cities.
20. 1 city.
21. Includes Proctor and Cass Lake, Minnesota.
22. 4 cities.
23. 7 cities.
24. 6 cities.
25. 3 cities in Minnesota.
26. For 3 cities in Minnesota.
27. 7 cities.

MAXIMUM ELECTRIC LIGHTING RATES IN THE CITIES OF MINNESOTA

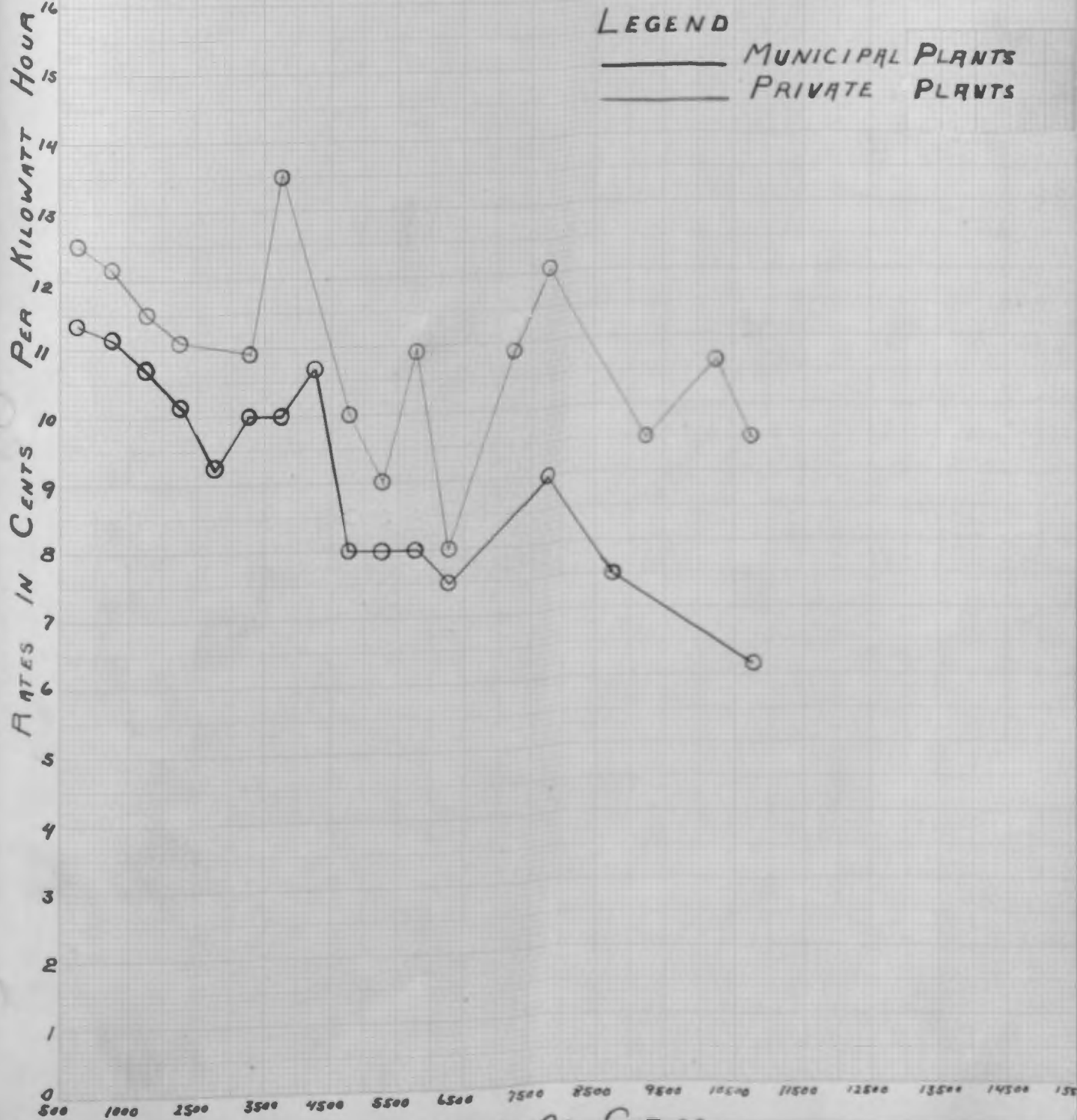
LEGEND

-  MUNICIPAL PLANTS
-  PRIVATE PLANTS

RATES IN CENTS PER KILOWATT HOUR

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000 6500 7000 7500 8000 8500 9000 9500 10000 10500 11000 11500 12000 12500 13000 13500 14000 14500 15000



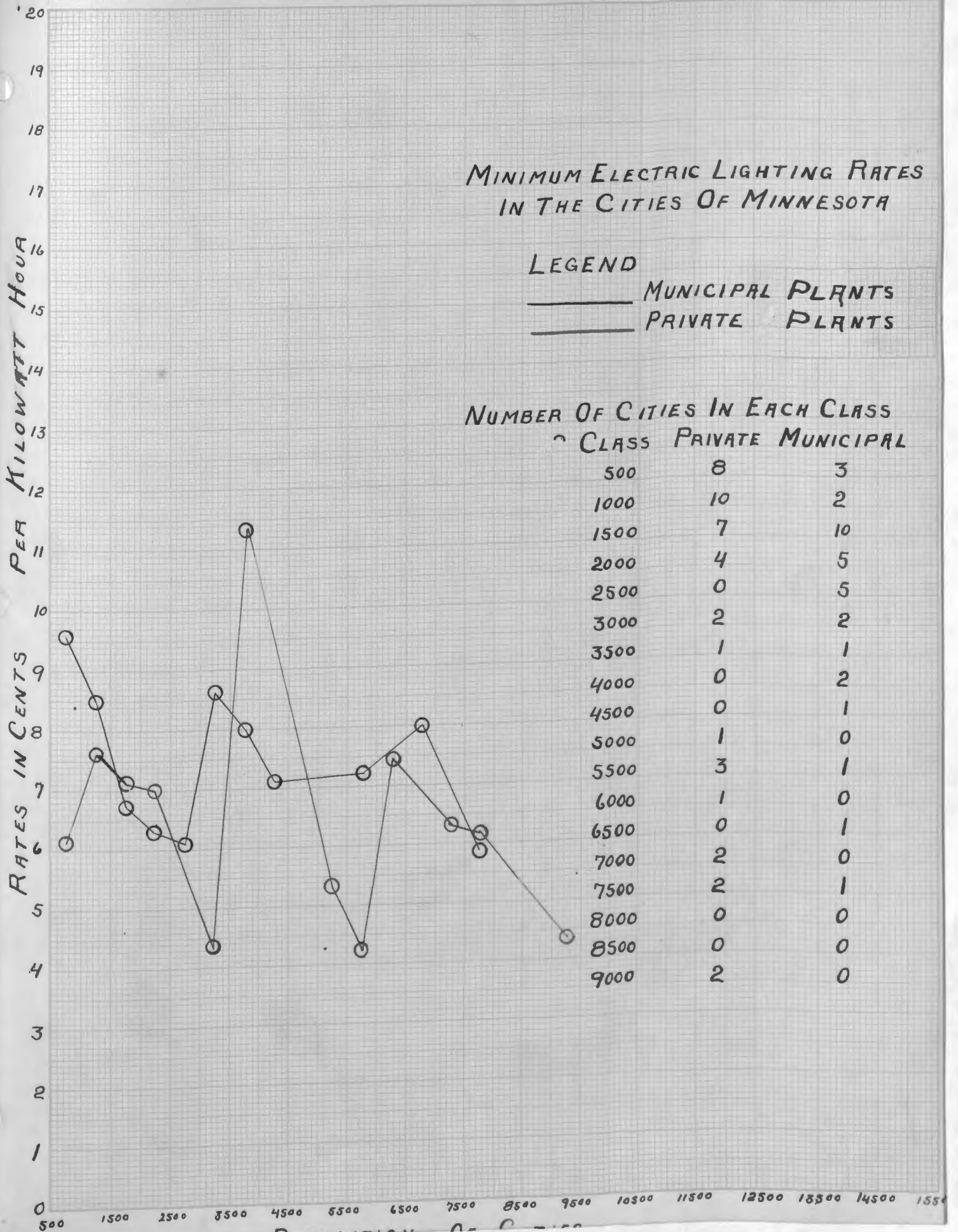
MINIMUM ELECTRIC LIGHTING RATES IN THE CITIES OF MINNESOTA

LEGEND

———— MUNICIPAL PLANTS
———— PRIVATE PLANTS

NUMBER OF CITIES IN EACH CLASS

CLASS	PRIVATE	MUNICIPAL
500	8	3
1000	10	2
1500	7	10
2000	4	5
2500	0	5
3000	2	2
3500	1	1
4000	0	2
4500	0	1
5000	1	0
5500	3	1
6000	1	0
6500	0	1
7000	2	0
7500	2	1
8000	0	0
8500	0	0
9000	2	0



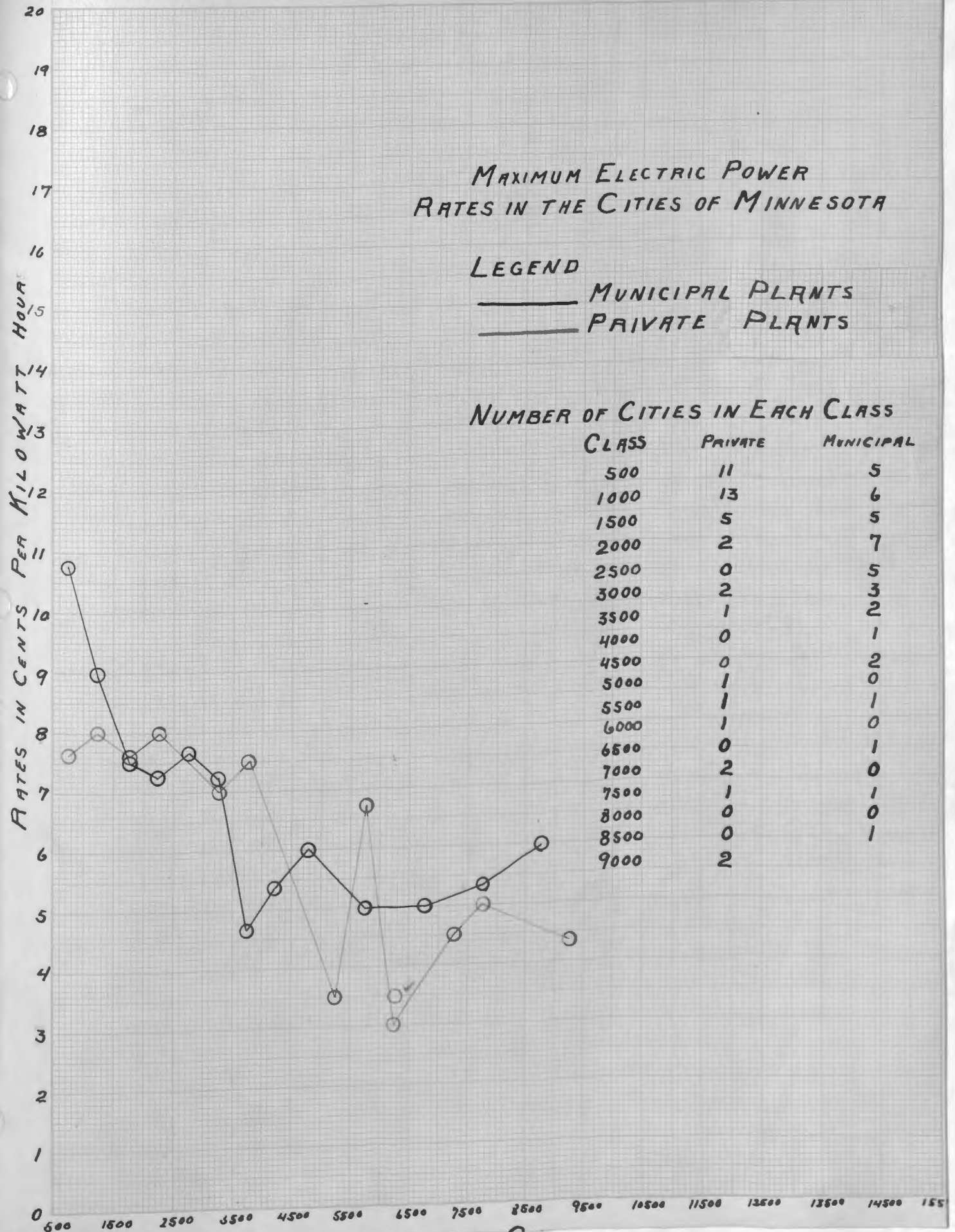
MAXIMUM ELECTRIC POWER RATES IN THE CITIES OF MINNESOTA

LEGEND

MUNICIPAL PLANTS
 PRIVATE PLANTS

NUMBER OF CITIES IN EACH CLASS

CLASS	PRIVATE	MUNICIPAL
500	11	5
1000	13	6
1500	5	5
2000	2	7
2500	0	5
3000	2	3
3500	1	2
4000	0	1
4500	0	2
5000	1	0
5500	1	1
6000	1	0
6500	0	1
7000	2	0
7500	1	1
8000	0	0
8500	0	1
9000	2	



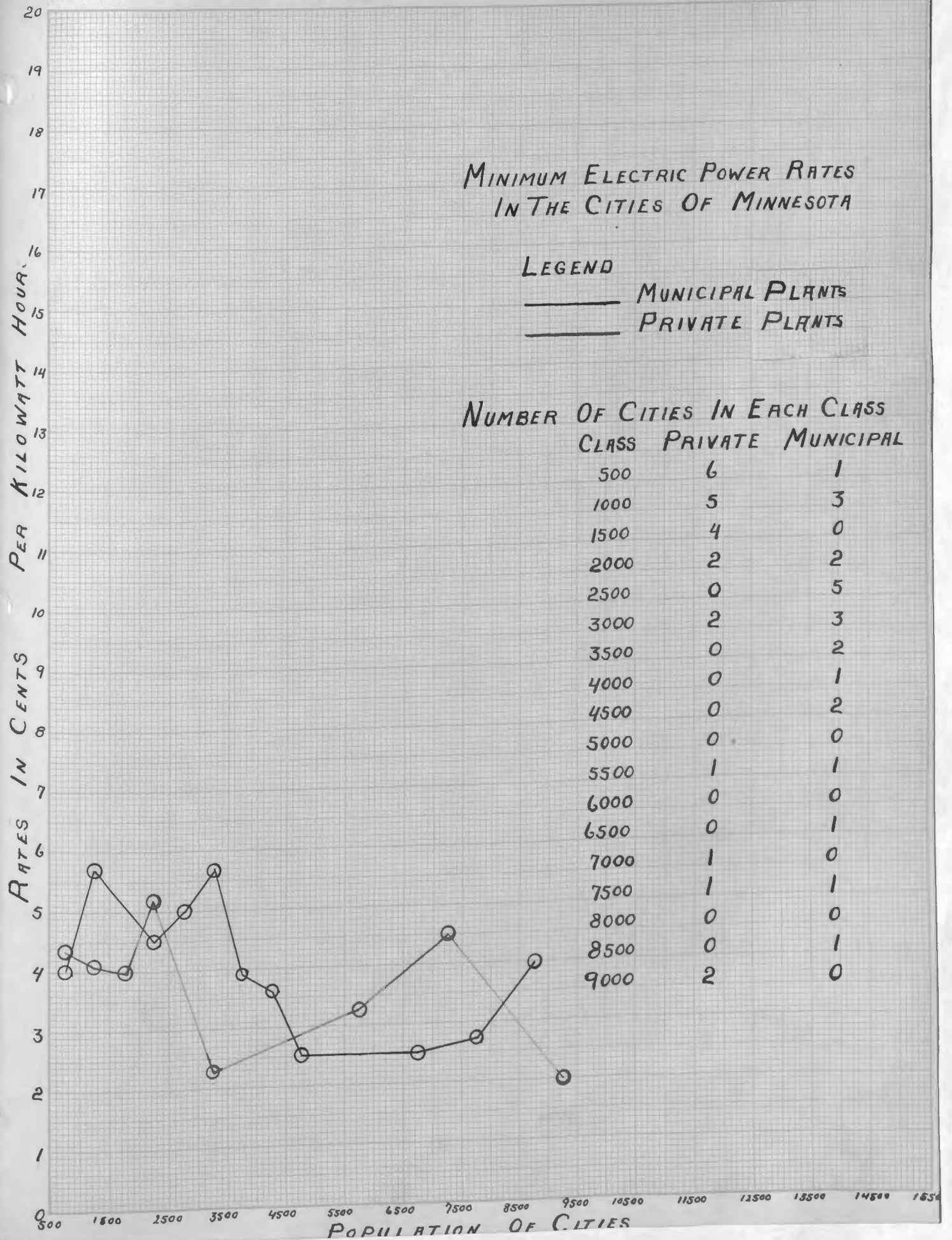
MINIMUM ELECTRIC POWER RATES IN THE CITIES OF MINNESOTA

LEGEND

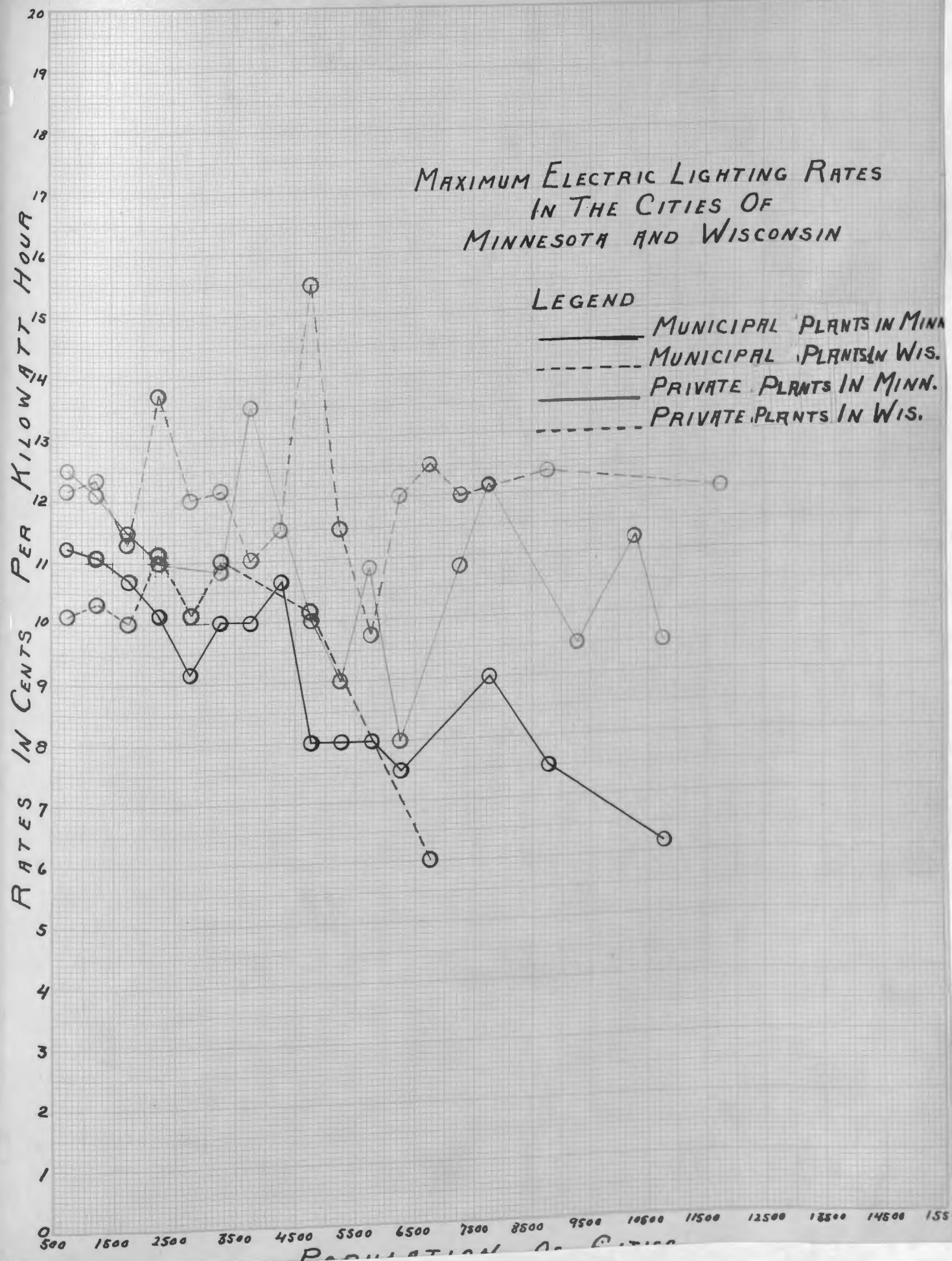
— MUNICIPAL PLANTS
— PRIVATE PLANTS

NUMBER OF CITIES IN EACH CLASS

CLASS	PRIVATE	MUNICIPAL
500	6	1
1000	5	3
1500	4	0
2000	2	2
2500	0	5
3000	2	3
3500	0	2
4000	0	1
4500	0	2
5000	0	0
5500	1	1
6000	0	0
6500	0	1
7000	1	0
7500	1	1
8000	0	0
8500	0	1
9000	2	0



MAXIMUM ELECTRIC LIGHTING RATES IN THE CITIES OF MINNESOTA AND WISCONSIN



Chapter VII.

SERVICES.

Having studied other important aspects of municipal ownership the kind of service rendered must come in for careful consideration in comparing privately owned and municipally owned plants. This is one of the chief points of contention between those who favor and those who oppose municipal ownership. The charge is often made that municipal plants as a rule give very poor service because "what is everybody's business is nobody's business."

On the other hand those in favor of municipal ownership try to show that it is conducive to better service both to the public and the private consumer. Perhaps as good a test as we can apply for measuring the efficiency of service rendered is by a study of the extent to which the product is used (number of consumers and consumption per capita) the general satisfaction and the rates at which the service is rendered. The last we have already considered.

Mr. Walton J. Clark after a discussion in which he shows that the private gas companies of Great Britain are doing or have done more toward increasing the number of consumers than have municipal plants, says:

"We must conclude from these facts that the companies are exhibiting more enterprise, a more adventurous spirit than the municipalities, and that the general good of the communities has been correspondingly advanced."^a

As Mr. Clark has suggested it seems that the number of consumers should be one test at least of the service which the plants are giving the public and in view of this fact the writer has attempted to make comparisons between the number of consumers served by privately owned and municipally owned plants, both light and water, and also between the number of street lights and fire hydrants in each case.

a. Walton J. Clark in the Civic Federation Report, op. cit. Part I, Vol. I, p.325.

A. Electric Plants.

(a) Number of Consumers.

The average number of consumers of electricity per 100 inhabitants in the third, fourth, fifth, and sixth class cities respectively in 1913, was, for the cities owning their own plants, 16.8, 15.8, 15.85, and 14.8 and in the cities where the plants were privately owned 14.7, 20.3^a, 13.1, and 10. From these figures it is seen that, with the one exception already noted, the number of consumers where the plants are publicly owned exceed the number where the plants are privately owned by from 14.3 per cent to 48 per cent.

Not only is the number of consumers per 100 of population much higher where the electric plants are municipally owned but 14 of the 81 municipally owned plants there are 14 cities, 17.5 per cent of the total, where the consumers number more than 20 per cent of the total population, the highest being Breckenridge with the consumers numbering 24.4 per cent of the population.

a. There are but 3 plants in this class and one of these is the plant in Montevideo where the percent is 32.4.

Of the privately owned plants but 3 or 3.4 per cent have consumers equal to 20 per cent of the population, the highest in this case is 32.4 per cent in Montevideo. This is so high that it must mean that some of the consumers live outside the city. These figures appear to be rather striking to the writer and especially so in view of the statement so often made, that private concerns have more consumers than have municipally owned plants.

Where the number of consumers equals 20 per cent of the number of inhabitants it is probably safe to say that practically every residence in the city has electric lights. The city clerk of Two Harbors, where the per cent is 18 plus, writes that practically every house in that city is wired. Of course this would vary slightly in different places. On this basis of calculation it would seem that about 78 per cent of the inhabitants of cities supplied by municipal plants use electric light while but 58 per cent of the inhabitants living in cities served by private companies do so.

(b) Amount of Current Used.

The average number of kilowatts used per consumer in cities of less than 10,000 inhabitants was 1383 for the privately owned plants and 595 for the public plants. This large discrepancy between the two is due to the output, comparatively, in the larger cities. Only two of the 24 municipally owned plants are in cities of 5,000 inhabitants or over while 5 of the 13 private plants are in cities of 5,000 or more inhabitants. If plants located in cities of less than 5,000 are considered and this would seem to be much fairer the amount sold per consumer is 814 kilowatts for the private plants and 542 kilowatts for the public plant.

The average consumption per capita in these cities just considered is 87 kilowatts for the municipal plants and 60 kilowatts for the private plants. If the data were at hand for a large number of plants in cities of 5,000 inhabitants or less the average number of kilowatts per consumer for both kinds of plants would probably be about the same and somewhere between 350 and 650. The average per consumer in private plants which was found above to be 814 is only 647 if the plant in Clarkfield is excepted. The

average for this plant is 3780 kilowatts due to the fact that the plant belongs to and furnishes current for the Clarkfield Roller Mills. The average consumption here is the highest of any place in the state, and, the price to the consumer for lighting is 15 cents per kilowatt.

(c) Operating Periods.

The operating period should be of some significance even when there is little or no power used since current is often used in the small villages for ironing and heating, and for washing machines. Of 50 privately owned plants in cities of less than 2000 inhabitants 39 operate 24 hours per day, 3 from 9 to 12 hours, and 8 six hours a day. Of 53 municipally owned plants in cities of less than 2000 inhabitants 30 operate 24 hours daily, 17 from 9 to 12 hours, and 6 six hours per day. The privately owned plants give better service in this respect than the municipal plants. Practically all the plants in cities of over 2000 operate continuously.

(d) Street Lighting.

Nothing has been said as to the number of street lights as indicating the service given the public. This must be treated as briefly as possible.

The total population of the 71 cities which are supplied by municipal plants is 152,342 and of the 69 cities, of less than 10,000 inhabitants, supplied by privately owned plants is 151,584. The total number of arcs in the first class is 865 and in the second class 858 and the total number of incandescents in the first class 5,738 and in the second 4,680. This makes the number of inhabitants in the cities owning their own light plants, 26.5 per light, of any kind, and 178 per arc light. The same averages for privately owned plants are 32.3 and 176. There does not therefore appear to be much difference in the number of lights although the municipal plants have a few more ^{the private.} than ~~than~~.

The question now arises as to the number of outage hours in the two cases. This would be necessary to solve the question as we might wish to solve it but on this point the writer has no definite information. Suffice it to say that a great many letters have stated that a change was made from private to municipal ownership in order to improve the service and the letters usually contend that this has been accomplished. In as much as most of the correspondence has been carried on with municipal authorities the

answers may be taken with a grain of salt. However, in the ten or twelve towns which the writer has visited there seemed to be a high degree of satisfaction with the plants,

B. Water Works.

(a) Number of Consumers.

The number of water consumers per 100 inhabitants in each of the 6 classes of cities respectively, beginning with the first class, is 13, 13.5, 14.3, 8, 10, 7.76 . The average number of consumers in the 3 cities of the third class that have privately owned plants, is 12.1 and in the 2 such cities in the fourth class, 7.2. This kind of data is not supplied in the report published by the Railroad Commission of Wisconsin.

(b) Hydrants per 100 Inhabitants.

The number of hydrants per 100 inhabitants in each of the 6 classes respectively, beginning with the first class, is 1.6, 1.7, 1.52, 1.2, 2 and 2. The number of hydrants per 100 inhabitants in the 3 cities of the third class, having privately owned plants, is 1.7, and for the 2 in the fourth class, 1.66. The average num-

ber of hydrants per 100 inhabitants in 11 Wisconsin cities where the plants are privately owned, is 1.6. These cities vary in size from 2,000 to 50,000 inhabitants.

While the data is too meager for any very exact conclusions, it seems safe to say that the number of consumers and the number of hydrants are as great, at least, where the plants are municipally owned as where privately owned.

The general spirit of the 10 or 12 cities which the writer has visited seems to be favorable toward the continued municipal ownership of the utilities already municipalized. There seems to be a certain civic pride in the water and light plants in these towns. There were, however, in some of these towns, certain factions that could see nothing but bad in "the unbusiness like management" of the publicly owned utilities. This is probably a healthful state of affairs as it tends to keep municipal officials, and especially those connected with the utility plants, from growing negligent.

Chapter VIII.

TAXES.

Thus far no reference has been made to what the municipality loses in the way of taxes when the public utilities are publicly owned. In 1911 the tax rate for municipal and school purposes on the true valuation^a averaged 9.35 mills in the three cities of the first class, the highest being 9.62 mills in Minneapolis, the lowest, 9.02 mills in St. Paul. The average rate in cities of the second class, 5,000 to 50,000, was 6.68 mills varying from 16.21 mills in Crookston, 14.92 mills in Brainerd, 13.29 mills in Rochester, and 12.24 mills in Virginia, to 6.64 mills in Eveleth, and 2.39 mills in Hibbing. The average in cities of the third class was 10.11 mills varying from 16.71 mills in East Grand Forks, 16.54 mills in Ely, and 16.04 mills in Staples to 6.82 mills in West Minneapolis, and 1.66 mills in Richfield. The average in cities of the fourth class was 8.53 mills, varying from 21.55 mills in Cass Lake to 3.95 mills in Mountain Iron.

a. This is not the legal "true valuation" but supposedly actual value of the property taxed. The rates given were taken from the Tax Commission Report, op. cit.

The levy in Minneapolis in 1914 was 33.85 mills (not including ward taxes) for municipal, county and state purposes with 4.75 mills going to the state and 2.70 mills to the county. The city receives in taxes from one half to one and one half per cent of the value of public utilities less in taxes when such utilities are publicly owned than when privately owned. In only one of the reports examined has any allowance been made for taxes. The city of Stillwater allows \$24.00 for taxes.

Of course, the privately owned plant would have to pay taxes to the state and the county as well, and this would range from one half per cent to two per cent on the value of the plant, or it would be necessary for a private company to earn from one half per cent to two per cent more than the municipal plant to show equal earnings. This means that in comparing earnings, rates, services, etc., of privately owned with publicly owned plants, it would be necessary to lower the earnings on the municipal plants by the above per cent to make a fair comparison.

a. The Law of 1913, Chapter 438, provides for taxing household goods at 25 per cent of the true value, stocks of goods at 33 1/3 per cent, and other property, including ore land, at 40 per cent of the true value.

Chapter IX.

SUMMARY AND CONCLUSION.

(a) Legislation.

Although the State Constitution of Minnesota is silent on the question of Municipal Ownership and Municipal debt limitations, legislation for the past 25 years has been especially favorable toward increasing the powers of municipalities.

(b) Extent of Ownership.

Such legislation has doubtless been both a cause and result of the growth of municipal ownership. Whatever the cause it has been shown in this paper that as large if not a larger percentage of the public utility plants of Minnesota are municipally owned as any other state in the Union. At present it ranks third in the number of municipally owned electric light plants, second if not first in municipally owned gas plants and probably has a larger portion of its water works publicly owned than any other state.

(c) Output of Gas and Electric Plants.

Although the output of municipal electric and gas plants has been increasing very rapidly it is still insignificant as compared with the total output of all the plants of the state and the increase in the output of municipal electric plants at least is not nearly keeping up with the increase for all the plants in the state.

The municipal electric plants generated 27.5 per cent of the total output in 1902 and only 8 per cent in 1912. The output of municipal gas plants (including Duluth) equaled about 8 per cent of the total output in 1913.

A great many of the gasoline and acetyline gas plants have proved unsatisfactory and are being rapidly replaced by electric plants. At the same time some of the smaller cities and villages are finding it profitable to buy current instead of generating it and use their own distributing system only.

(d) Accounting Systems and Reports.

The accounting systems in use in most cities are very

unsatisfactory. The reports, such as they are, are too often wholly inadequate for furnishing definite data as to the actual financial condition of the utilities, without additional information. As a result the inhabitants of most cities and villages have no way of knowing whether the consumers or tax payers are paying an undue amount for services received. Some kind of oversight of municipal accounts should be exercised by some one, presumably a state official or officials, who will at least make it possible for any ordinary voter to understand the actual financial operations of the utilities. This would not necessarily mean very close supervision or control of municipal operations. Mr. Bemis, says, "As long as cities, through proper state supervision of accounts, know what their plants are doing, they should be free to run them at a profit or loss, and with such an apportionment of rates between different classes of consumers, as local public opinion demands."^a

(e) Finances of the Utilities.

The financial statements examined, after making

a. Annals of the American Academy, Vol. 57, No. 146, p. 70, "Public Utility Regulations", by E. W. Bemis.

allowances for depreciation as well as interest and operating expenses, show that while a number of water works are being operated at an apparent loss practically all the electric works and nearly if not all the combined plants are at least not operating at a loss. It has also been found that by far the greater number of cities do not credit the water works with enough for fire protection and water actually used by the city and that a larger number allow them nothing whatever. This same condition is true to a less degree of electric plants.

(f) Rates.

There can be no doubt that the maximum electric light rates are lower where the plants are municipally owned than where privately owned. The difference varies from 10 or 12 per cent to 35 or 40 per cent. The minimum rates are slightly lower when the plants are privately owned. As before pointed out the maximum rates are probably by far the more important in the smaller cities.

The water rates in Minnesota cities owning their own plants as compared with rates in Wisconsin cities where the plants are privately owned and with the few such cities in Minnesota are low.

(g) Service.

As regards service it has been shown that there are more consumers per 100 inhabitants where the plants are municipally owned. This difference is very considerable in some instances. There are also a few more street lamps where the plants are publicly owned.

The operating periods it will be recalled are somewhat longer for private plants.

Finally it appears that by far the greater number of the municipally owned plants are being operated so that the income from operation is equal to or greater than all expenditures for operation and maintenance, necessary interest charges and depreciation. This statement is true for a large number of water plants only after allowing a minimum charge for water used by the city. The amount which most of the plants are earning on the capital invested is usually considerably less than is considered a fair income for private capital so invested. This, however, is largely accounted for in the lower rates offered by the municipal plants and, in many places, the better service. These last two

items must justify municipal ownership in Minnesota if it is to be justified.

Mr. F. A. C. Perrine of Leland Stanford University has said that "A service is properly performed for the benefit of the entire community when the minimum amount of energy is employed in preparing for the service and executing it."^a The present study has not been complete enough to answer in any wise as to the efficiency of municipal ownership as compared with private ownership measured by the "amount of energy" employed. It may be that the private plants are much more efficient, however, the writer questions the justification of such ownership merely because of greater efficiency. Efficiency is of doubtful value unless the consumers and tax payers are allowed to participate in its advantages.

No effort has been made to determine the success or failure of municipal ownership in past years. An attempt has been made to present a historical sketch and an analysis of the present status of municipal ownership in

^aF.A.C. Perrine, D.Sc. Prof. of Electrical Engineering, Leland Stanford University - "Validity of Electric Light Comparisons" Published in Municipal Monopolies by E.W. Bemis, p. 286.

Minnesota. Whether it is more or less successful now than in past years has not been considered.

The writer is bound to conclude from this study that municipally owned utilities as a whole in this state are giving efficient, cheap, and satisfactory service. At the same time there is a very urgent need for a readjustment of rates as between tax payers and consumers or more especially for a better dissemination of knowledge concerning the actual operations of such utilities among the owners. This can probably be brought about most effectively through some kind of a state board which shall have oversight of the accounting systems of the cities and villages of the state and which shall see to it that published accounts are not only absolutely correct but that they express the whole truth in a clear and concise manner.

B I B L I O G R A P H Y.

A. Source Material.

1. City Charters as follows:

Ada, Albert Lea 1902, Austin, Bandette, Bemidji 1914, Brainerd 1908, Cannon Falls 1905, Crookston 1907, Detroit, Duluth, Ely 1903, Fairbault, Glencoe 1909, Glenwood, Granite Falls 1907, Hutchinson 1913, Lindstrom 1910, Little Falls 1907, Mankato 1911, Marshall, Minneapolis, Montivedio 1909, Moorhead 1900, Morris 1913, Ortonville, Red Wing 1909, Renville 1906, Rochester, St. Paul 1913, So. St. Paul 1906, Staples, 1906, Tracy, Two Harbors 1907, Virginia, West Minneapolis 1907, Worthington 1909.

2. General.

Constitution of Minnesota.
General Laws of Minnesota: 1870, 1885, 1891, 1893, 1897, 1899, 1903, 1905, 1907, 1909, 1913.
Revised Statutes of Minnesota 1913.
Special Laws of Minnesota 1870, 1873, 1879, 1881, 1883.
American Charters Constitutions and Organic Laws, compiled by Francis Newton Thorpe and published by order of Congress.

3. Commission Reports and Divisions.

Report of the Wisconsin Railroad Commission on Water Rates, 1912.
In re Fond du Lac Water Co., 5 W.R.C.R. 1910.
City of Rhenlander vs. Rhenlander Light Co., 9 W.R.C.R. 1908.
In re Manitowac Water Works Co., 7 W.R.C.R. 1911.
City of Janesville vs. Janesville Water Co., 7 W.R.C.R. 1911.
City of Marinette vs. City Water Works Co., of Marinette, 8 W.R.C.R. 1911.
Report of the Board of Gas and Electric Light Commissioners of Mass. 1913.

4. Law Cases.

Levey vs. McClellan, 196 N.Y. 178.
Winston vs. Splkane, 12 Wash. 534.
Overall vs. Madison, 125 Ky. 68.
Christie vs. Duluth, 82 Minn. 202.
Kelley vs. Minneapolis,
Grant vs. City of Davenport, 36 Iowa 396.
City of Valpariso vs. Gardner, 97 Ind. 1.
City of Corpus Christie vs. Woessner, 58 Texas 462
Smith vs. Dedham, 144 Mass. 177.
State vs. McCauley, 15 Col. 530.
Capital City Water Works Co., vs. City of
Montgomery, 92 Ala. 366.
McBean vs. Fresno, 112 Cal. 159.
Ladd vs. Jones, 61 Ill. 584.
Crawfordsville vs. Braden, 130 Ind. 149.
Holton vs. Camilla, 134 Ga. .
Palestine vs. Silas, 225 Ill. 630.
Voss vs. Waterloo Water Co., 163 Ind. 69.
Reynolds vs. Waterville, 92 Minn. 292.

5. Reports, Etc.,

Brown: Directory of American Gas Works from
1887 - 1914.
Manual of American Water works, 1897.-M.N.Baker.
Municipal Year Book, 1902 - M.N.Baker.
Report of the National Civic Federation on Mun-
icipal and Private Operation of Public Utilities,
1907, Part II, Vol. 1 and 2.
Report of the Municipal Reference Bureau of
Minnesota on Public Utility Rates in Minnesota,
1914. This report was prepared by G. A.
Gesell of the University of Minnesota.
Reports of Municipal Accounts - Iowa, 1914. This
is the 7th Annual report of the department of
Finance and Municipal Accounts of Iowa.
Proceedings of the City Council of Minneapolis,
May 22, Sept. 25, and Nov. 13, 1914 and April
9, 1915.
Report of Municipal Baths in Minneapolis, 1913.
Report on Municipal and Government Ice Plants in

the United States and Foreign Countries, 1914 -
Prepared by Jeanie Wells Wentworth of Columbia
University for the Governor of Manhattan Bronx.
Second Annual Report of the Minneapolis Civic
and Commerce Association, Oct. 1913.
Reports of Public Utilities: - 1912-1913

Albert Lea - Water.
Alexander - Water and Electric.
Austin - Electric. Water.
Barnesville - Electric and Telephone.
Bemidji - Water.
Buffalo -
Detroit - Water and Electric.
Duluth - Water and Gas.
Elmore -
Fergus Falls - Electric.
Glencoe - Water.
Janesville
Lithhfield - Water and Electric.
Madison - Water and Electric.
Mahnomon - Electric.
Marshall - Water and Electric.
Melrose - Water and Electric.
Minneapolis - Water.
Moorhead - Water and Electric.
New Ulm - Water and Electric.
Nowood - Gas.
Owatonna - Water.
Paynesville - Water and Electric.
Red Wing - Water.
St. Cloud - Water.
St. Paul -
St. Peter - Water and Electric.
Sauk Center - Water.
Staples - Water and Electric.
Stillwater - Water.
Virginia - Water and Electric.
Warren - Water and Electric.
Willmar - Water and Electric.
Worthington - Water and Electric.
Two Harbors - Water and Electric.
Breckenridge - Water and Electric.
E. Grand Forks - Water and Electric.

Report of the Tax Commission of Minnesota for 1921 - Chapter 15, which is the chapter on Cost of Governments in Minnesota, is the only part of the report which has been used.

6. United States Census and Other Federal Documents.

- 7th Census of the United States Statistics of Progress.
- 9th Census of the United States Population and Social Statistics.
- 10th Census of the United States Population.
- 12th Census of the United States, Vol. 10.
- Special Census Report on Central Light and Power Stations, 1907 and 1912.
- Special Census Report on Central Lighting Stations, 1902.
- Special Census Report on The Manufacture of Gas, 1909.
- Special Census Report on Public Baths which is Bulletin No. 54, Department of Labor, 1904.

7. Questionnaire:

A questionnaire containing the following questions was sent to the cities of Minnesota and satisfactory returns were received from approximately 65 per cent of the cities owning utilities:-

1. Does your city own and operate a water works system, electric light plant, gas plant, market place, or bathhouse?
2. What is the cost to date of each? The original cost?
3. What is the present bonded indebtedness in each case?
4. What provision has been made for paying off the bonds?
5. Why did the city take it from the private Company?
6. When was the utility first operated?
7. When was it acquired by the city?
8. Is municipal ownership in your city considered successful?

B. Secondary Material.

1. Pamphlets:

Berkeley Civic Bulletin on Municipal Lighting, by the City Club of Berkeley, Mar. 20, 1914.
Legislative Bulletin No. 5, Wisconsin University. This is a short study of the growth of electric and gas plants by E. B. Smith.
Acetyline for Lighting Country Homes, by J.W. Bowles of Missouri University, 1910.

2. Magazines and Magazine Articles:

Annals of the American Academy, Vol. 31, which is devoted to papers on the regulation of public service corporations, and Vol. 57, which is devoted to papers on Municipal Ownership of Public Utilities.
Howard L. McBean - A Review of Oscar L. Pond's book, Public Utilities in the Political Science Quarterly, Vol. 29, No. 1.
E. W. Bemis - The Gas Industry in the Publications of the American Economic Association, 1891.
The National Municipal Review, Vol. 1, 2 and 3.
The Municipal Journal and Engineer for 1912, 1913 and 1914.
The Electrical World for 1913 and 1914.

3. Newspapers:

Minneapolis papers for 1912, 1913 and 1914.
St. Paul papers for May, 1914.
Daily Free Press of Mankato for Mar. and April, 1914.

4. Books:

Bemis, E. W. Municipal Monopolies.
Dillon, J. F. Laws of Municipal Corporation, 4th Edition.
Goodnow, F. J. Comparative Administrative Law.
McVery, F. L. The Government of Minnesota.
Fairlie, J. A. Municipal Administration.
Pond, Oscar L. Public Utilities.
The City of St. Paul - Published by the Pioneer Press, 1897.