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NOTICE OF APPEAL.

(Filed Sept. 13, 1925.)

NEW JERSEY SUPREME COURT.

MILLVILLE ELECTRIC LIGHT COMPANY, v. BOARD OF PUBLIC UTILITY COMMISSIONERS OF THE STATE OF NEW JERSEY, *Respondent.*	On Certiorari. Notice of Appeal.

Hon. Thomas Brown, Attorney of Respondent.

Dear Sir:

Take notice that the prosecutor above named, Millville Electric Light Company, appeals to the Court of Errors and Appeals from the whole of the judgment entered in this cause, which judgment affirmed the decision and order of the respondent, the rule for said judgment being entered on the 21st of April, 1925.

LEWIS STARR,
Attorney of Prosecutor, Millville Electric Light Company.

September 10, 1925.

[ENDORSED]

Service of a copy of within notice is hereby acknowledged this 12th day of Sept., 1925.

Thomas Brown,
Atty. for Respondent.

OPINION.

(Filed Apl. 17, 1925.)

NEW JERSEY SUPREME COURT.

No. 216. March Term, 1925.

MILLVILLE ELECTRIC LIGHT Co.,
Prosecutor,
v.
BOARD OF PUBLIC UTILITY COMMISSIONERS OF NEW JERSEY,
Defendant.

On Certiorari.

Argued March 3, 1925; Decided April 17th, 1925.
Before JUSTICES KALISCH, BLACK and CAMPBELL.

For the prosecutor: LEWIS STARR, ESQ.
For the defendant: THOMAS BROWN, ESQ.

Per Curiam:

We think the meritorious question involved in this case is determined by the application of the rule, stated by the Supreme Court of Maine in the case of Kennebec Water District v. Waterville, 97 Me. 185, and approved by Vice Chancellor Pitney in the carefully considered case of Long Branch Commission v. Tintern Manor Water Co., 70 N. J. Eq. 71, 83; affirmed 71 Ib. 790. That case was affirmed for the reasons stated by Vice Chancellor Pitney. That rule summarized, so far as it applies to the facts developed in the record of this case is as follows: the elemental principles are the right of the company to derive a fair income, based upon the fair value of the property at the time it is being used for the public, taking into account the cost of maintenance or depreciation and current operating expenses, and the right of the public to have no more exacted than the services in themselves are reasonably worth, including a fair income to the stockholders on their investment.

The facts to which this rule may be applied are these, the Board of Public Utility Commissioners, on the 29th of October, 1923, by a formal order, determined that the schedules of rates or charges for electric energy made by the prosecutor prior to September, 1923, to the territories served, were "unjust and unreasonable." The Board did in the same order determine and fix "just and reasonable" rates. This is the order which is now under review in this court. The rates were made effective as of December 1st, 1923.

The Board did, by its order, eliminate the value of the prosecutor's steam plant, the value of which as found by the Board aggregating upwards of

$70,000 in excess of the cost of current otherwise purchased, as constituting property not useful in the conduct of its business. The value of the steam plant was thus excluded by the Board in determining the value of the property of the prosecutor.

It would serve no useful purpose to re-state the facts on which the order of the Board was based. The facts with schedules are clearly and somewhat minutely stated in the decision of the Board, dated August 22, 1923, covering in the printed book, pages from 15 to 31. The case was re-opened for further hearing October 29, 1923. A supplemental order and decision filed covering in the printed book pages from 36 to 40 dated October 29, 1923.

Our reading of the record leads us to the same conclusion as that filed by the Board. The order so made is supported by the evidence on which it is based.

In the case of the Atlantic City Sewerage Co. v. Board of Public Utility Commissioners, 125 Atl. 327, it was said, the finding was made upon tangible and competent data and evidence. This case is in point. It was affirmed by the Court of Errors and Appeals for the reasons expressed in the opinion of the Supreme Court.

The Courts will not merely substitute their judgment for that of a legislative body; Public Service Gas Co. v. Board of Public Utility Commissioners, 84 N. J. L. 468.

The value of the prosecutor's plant as shown by the engineers is as follows: the engineers of the municipality valued the plant at $157,028, the engineers of the prosecutor valued the plant at $362,-106, the value adopted by the Board of Public Utility Commissioners was $205,506.

In the brief of the defendant, it is estimated, that by the different rates allowed by the Board, Record,

pages 24 to 26, there will be a net return of eight per cent on the valuation of the plant, as fixed by the Board.

The order of the defendant is affirmed with costs.

RULE FOR JUDGMENT OF AFFIRMANCE.

NEW JERSEY SUPREME COURT.

No. 216. March Term, 1925.

MILLVILLE ELECTRIC LIGHT CO.,
Prosecutor,
v.
BOARD OF PUBLIC UTILITY COMMISSIONERS OF NEW JERSEY,
Respondent.

Rule for Judgment of Affirmance.

This Court having inspected the transcript of the proceedings, together with the decision and order of the Board of Public Utility Commissioners returned with the writ of certiorari in this matter, and the reasons filed by the prosecutor, Millville Electric Light Company; and having heard the argument of counsel thereon and maturely considering the same, do order that the decision and order of said Board of Public Utility Commissioners be in all things affirmed.

Rule entered this 21st day of April, 1925.
On motion of

THOMAS BROWN,
Attorney of Respondent,
Board of Public Utility
Commissioners.

A true copy.
EDWARD J. KELLEHER,
Clerk.

REASONS FOR REVERSAL.

(Filed Oct. 9, 1925.)

NEW JERSEY COURT OF ERRORS AND APPEALS.

MILLVILLE ELECTRIC LIGHT COMPANY, *Prosecutor-Appellant,* v. BOARD OF PUBLIC UTILITY COMMISSIONERS, *Respondent.*	On Appeal. Reasons for Reversal.

The Millville Electric Light Company, prosecutor-appellant above named, hereby assigns the following reasons for the reversal of the judgment of the Supreme Court, which affirmed the determination and finding of the Board of Public Utility Commissioners, which was reviewed by the writ of certiorari issued out of said Supreme Court:

1. The Supreme Court erred in affirming the proceeding, finding and determination of the Board of Public Utility Commissioners.

2. The Supreme Court should have reversed the proceeding, finding and determination of the Board of Public Utility Commissioners for one or more of the reasons or causes of reversal assigned therefor in the Supreme Court.

LEWIS STARR,
Attorney of Prosecutor-Appellant.

[ENDORSED]

Service of a copy of the within reasons is hereby acknowledged this 9th day of October, 1925.

Thomas Brown,
Counsel for Respondent.

NEW JERSEY COURT OF ERRORS AND APPEALS.

MILLVILLE ELECTRIC LIGHT COMPANY,
Prosecutor-Appellant,

v.

BOARD OF PUBLIC UTILITY COMMISSION OF THE STATE OF NEW JERSEY,
Respondent.

ON APPEAL FROM THE SUPREME COURT.

BRIEF ON BEHALF OF PROSECUTOR-APPELLANT.

STATEMENT OF THE CASE.

This appeal brings up, for review, the judgment of the Supreme Court, affirming an order of the respondent.

The writ issued out of the Supreme Court removed an order of the respondent, determining that the schedule of rates or charges for electric energy filed by the prosecutor prior to September, 1923, was unjust and unreasonable, and fixed, as just and reasonable, a certain schedule of rates or charges,

particularly set forth in the order, and directed that the said schedule and charges so fixed should be effective on and after December 1, 1923 (C., p. 32, *et seq*).

The reasons assigned in the Supreme Court for the reversal of the order will be found on C., p. 525, *et seq.*, which, generally stated, are as follows:

1. The respondent erred in holding that the former schedule of rates, effective prior to September, 1923, was unjust and unreasonable on the ground that such rates were no more than sufficient to provide an adequate return, to the prosecutor, upon the property used and useful in the operation of its business.

2. The schedule of rates fixed by the said order to take effect December 1, 1923, will not, in fact, produce to the prosecutor an adequate return for its property used and useful in the conduct of its business because the order made by the respondent was based upon a finding that certain property of the prosecutor, known as the steam plant, should be entirely excluded in determining the value of the property of the prosecutor used and useful in the conduct of its business.

3. The order of the Board in eliminating the cost of construction and operation of the steam plant was not founded upon proper proof submitted to the Commissioners.

4. The action of the respondent in excluding from the operation of the steam plant, $2,400 for production expenses, $7,458 for street lamp expenses, and $6,484 for law expenses, was improper and illegal and not justified by the proof.

The reason for reversal assigned in this court is that the Supreme Court erred in affirming the determination of the respondent. (C., p. 7, l. 1.)

HISTORY OF THE LITIGATION.

On October 25, 1920, the prosecutor filed an amended petition for the approval of a schedule of rates, increasing the rates then charged, which had been effective since January 1, 1917. These earlier rates had been approved by the respondent. (C., p. 4, *et seq.*)

Hearings were had upon said petition, but before the matter was concluded, the then existing commission had been ousted by the order of the governor, which order was then under judicial review. Owing to the fact that no decision had been rendered upon its application and that the prosecutor had been losing from $4,500 to $8,000 a month in operation during the whole of 1920, on February 23, 1921, the prosecutor filed and put in effect, as of the 1st of March, 1921, a new schedule of rates. (C., p. 12, *et seq.*)

On October 4, 1921, a hearing was ordered by the new commission with respect to the rates put in effect because no decision had been rendered by the Board. Before that time, the City of Millville filed a bill in the Court of Chancery to restrain the prosecutor from charging the rates, which it had filed and put in effect in February, 1922, and at said hearing, because of the pendency of the equity suit, the matter was laid over without day (C., p. 45, *et seq.*, l. 13.)

On December 13, 1921, another hearing was held by the respondent before Judge Tracy, president of the Board, and the statement was made then, by the latter, that the Board would initiate its own investigation for the purpose of determining whether or

New Jersey State Library

not the rates then in existence were just and reasonable (C., p. 55, l. 27).

The hearings began October 3, 1922 (C., p. 58, *et seq.*), and terminated by the respondent, on August 22, 1923, filing a decision in which it was determined that the schedule of rates charged by the prosecutor was unjust and unreasonable, and the Board then fixed a new schedule, the base rate of which was twelve cents per k. w. net. In such decision, the respondent determined that the prosecutor might be permitted to file a schedule of rates as thereby determined to be just and reasonable, to become effective as of January 1, 1923, which date was nearly nine months prior to the time the decision was rendered. (C., p. 15, *et seq.*) (C., p. 26, l. 22.)

Within the statutory period of thirty days, a writ of certiorari was sued out by the prosecutor to remove the decision of the Board. No formal order, based upon the decision, has been entered, but the clerk of the Board, in correspondence with the prosecutor with respect to the time when the rates became effective, seemed to indicate that the Board intended to consider the decision filed August 23rd, as its formal order.

On October 2, 1923, the matter was again brought to the attention of the Board and adjourned, because of the absence of the prosecutor's counsel, to the 16th of October, 1923 (C., p. 486, *et seq*).

On the latter date, a hearing was again had and testimony taken in which it appeared that the writ of certiorari was sued out upon the theory that the Board did not intend to make any formal order to put its decision into effect, but expected to have the prosecutor observe the decision without any order.

When this situation was explained, proceedings were taken for the dismissal of the former writ,

which was consented to (C., p. 495, *et seq*). On October 29, 1923, the respondent filed a supplemental decision and the formal order, now removed by this certiorari, was made (C., p. 32, *et seq*).

No change was made, by the supplemental decision, in the rates fixed by the earlier decision filed August 22, 1923, but the respondent ordered that the rates be made effective as of December 1, 1923, instead of January 1, 1923, as contemplated by the former ruling.

In the supplemental decision, the Board used this language:

> "After the rendering of the decision, the company filed as its legal schedule of rates the "schedule set forth in the Board's decision, not, "however, making the effective date January "1st, 1923. In view of the fact that the rate "schedule as found by the Board has already "been filed, it is not necessary for the Board "to issue an order requiring the company to "do that which it has already done, inasmuch "as the company has requested an order be "issued in order that it may be in a position to "take an appeal therefrom, the Board will issue "an order based upon its decision requiring the "company to make effective the schedule of "rates fixed by the Board and as filed by the "company. As above indicated, as the schedule "fixed by the Board was based upon future operations and not upon the company's voluntary offer of reparation, therefore, no further "determination in that respect will be made, "but the schedule will remain as fixed and "filed."

In view of the statute, which provides that a writ of certiorari should act as a supersedeas against

the effectiveness of any order of the respondent, except upon special application, the prosecutor put the new schedules into effect. This, however, was done without prejudice, as to the then pending writ of certiorari. (See printed exhibits, C., p. 306.)

In the original decision filed August 22, 1923, the respondent eliminated the value of the prosecutor's steam plant as constituting property used and useful, the determination in this regard being as follows:

> "The record shows that the cost of operating "the steam plant as constructed by the respon- "dent has, during the last three years, entailed "operating expenses and taxes, without any "return on the value of the steam plant, ag- "gregating upwards of $70,000 in excess of the "cost of current if purchased from the Millville "Manufacturing Company, which, as has been "above stated, has supplied the respondent with "current required by it for some years.
>
> "The cost of current generated in this steam "plant, due to poor load factor, installation of "obselete machinery, with excessive mainte- "nance charges, as well as duplicated labor "costs consequent upon the operation of two "small plants located at a considerable distance "apart in a single city, has largely exceeded "the cost of current purchased from the Mill- "ville Manufacturing Company.
>
> "In view of the facts in the case, the Board "cannot consider as controlling the costs of op- "erating the steam plant, which are in excess "of what the same current output would cost "if purchased from outside sources. In making "its estimates hereinafter, the Board will, there- "fore, consider that all current not generated "in the hydro-electric plant will be purchased

"at a price shown by the company's witnesses "in Exhibit R8, and all costs relating to the "construction and operation of the steam plant "will be eliminated from further consideration "herein."

It will be observed, therefore, that the respondent, by its determination and order, found that the prosecutor was not entitled to have a rate, which would produce a reasonable return based upon the value of the steam plant because:

1. The latter should never have been installed.

2. The cost of operating the steam plant was in excess of what current output would cost if purchased from outside sources.

3. That all current not generated by the hydro-electric plant of the prosecutor ought to be purchased from outside sources for a sum less than the prosecutor could generate the same (C., p. 18, l. 20).

During the period that the rates charged by the prosecutor, which were determined to be unjust and unreasonable, were in effect, the current came from three sources, to wit: A hydro-electric plant, a steam plant, and by purchasing from the Millville Manufacturing Company, an outside concern, which was in no way subject to the control of the prosecutor.

FACTS WITH RELATION TO THE STEAM PLANT.

The prosecutor began building the steam plant in July, 1916 (C., p. 289, l. 31). Prior to that time, current was generated, for sale by the company, by water power, and from gas engines at a plant on Sharp Street, and at times current was purchased from the Millville Manufacturing Company (C., p. 289, l. 38). The steam plant was put in actual operation February 1, 1920. The delay was occasioned by inability to secure material owing to the war and means with which to finance the construction. The boilers and engines were purchased in 1916, and a part of the machinery, in January, 1917, and the balance in July, 1920 (C., p. 290, l. 10).

The reason for building the steam plant was a demand for more current than the hydro station could furnish, and there was no certainty of receiving or buying current from the Millville Manufacturing Company. Their machines were then overloaded and the manager of the manufacturing company stated that he wanted the prosecutor to get off their machines and install one in the prosecutor's plant (C., p. 291, l. 5).

The testimony of Mr. Franklin upon this question is as follows:

> "Q. What was the reason for building the "steam electric station, why did the company "do that?
>
> "A. Well, there was a demand for more cur- "rent than the hydro station could furnish and "there was no certainty of receiving, buying "any current from the Millville Manufacturing

"Company. Their machines were overloaded "and they told me they wanted us to get off "of their machines and put in one of our own.

"Commissioner Osborne: He said 'they "told us.' Who does he mean?

"Witness: The Millville Manufacturing Com-"pany, Mr. Lewis, the manager.

"Q. (By Mr. Starr) That is the concern from "which you were getting the extra current?

"A. Yes.

"Q. Was it possible to increase the output "from your hydro-electric plant, your plant?

"A. No, sir, it was not.

"Q. Why not?

"A. Because we had an agreement with the "Millville Manufacturing Company whereby we "were entitled to take 150 gross horsepower or "100 net horsepower from the water power in "the lake, and no more than that. We did for "a while try to increase that with gas engines, "but it did not furnish satisfactory service.

"Q. Where did you locate the steam station?

"A. Where?

"Q. Yes.

"A. On the railroad track just south of the "gas company's plant.

"Q. Could you have installed the steam sta-"tion at the hydro plant?

"A. No, sir, we could not.

"Q. Why not?

"A. We had no land there and could not buy "any land. We could not get a switch in there "if we had the land, because it was all owned "by the Millville Manufacturing Company, and "they positively refused to allow us to put a "switch in there or use their switch.

"Q. What was the area of the land controlled "by the Electric Light Company at the hydro "station, do you recall?

"A. Well, about 50 by 100 feet, something "like that.

"Q. Not large enough to install a steam "plant?

"A. Nowheres near. It was all built on at "that time anyhow, it had the buildings of the "hydro plant on it.

"Q. Was the machinery used to equip the "steam plant new or second-hand?

"A. Second-hand.

"Q. Why did you purchase second-hand ma- "chinery?

"A. Because we could not get new machinery, "either turbines or engines or boiler within "from two years to thirty months, could not "get any promises of delivery in about that "length of time" (p. 291, l. 2 to p. 292, l. 24).

The boilers, when purchased, were in good condition, and the Hartford Steam Boiler Insurance Company approved a rating pressure of two hundred pounds to the square inch. These boilers were purchased upon recommendation of the engineer of the Curtis Publishing Company of Philadelphia, Pa., who had four of these engines in operation, that they were giving good service and were very economical. After an investigation, the engine was purchased (C., p. 293, l. 10). The company considered the advisability of purchasing new equipment, but could not secure same with any reasonable delivery. It is true that since the steam plant had been in operation, there had been one genuine breakdown, owing to the inefficiency of the chief engineer and carelessness of attendants, and the second one was an echo

of the original one. The engine was out of commission for a couple of months. The second breakdown, the result of the former, occurred in December, 1922. The details of the difficulty are shown by the testimony of Mr. Franklin, the general manager (C., p. 293, l. 38, *et seq.*).

At the time of the hearings, the engine of the prosecutor was undergoing a thorough overhauling, and the prosecutor was putting into effect certain recommendations of the engineering firm of Day & Zimmerman, with the idea of producing a more economical operation. It was shown that after these economies had been put into effect, the engine would be just as efficient as a new one, and good for ten years and the boiler would be as efficient as a new boiler of the same type (C., p. 296, l. 8).

Before the hearings were closed, certain other repairs were found necessary and were being hurried through as quickly as possible.

While the repairs were being made to the steam plant, current was purchased by the prosecutor from the Millville Manufacturing Company.

An investigation was inaugurated in November, 1922, to ascertain the relative difference in the cost of the current purchased from the Millville Manufacturing Company and that produced by the steam plant. In November, 1922, the steam plant produced current at a cost, placed on the switchboard of the prosecutor at .0389 per k. w., and if the same amount of current had been purchased from the Millville Manufacturing Company for the same month, including the overhead on the engine house and boiler house, which had to be included because it was there, the cost would be .04458 (C., p. 302, l. 32).

In anticipation of the investigation by the respondent and the municipal authorities of Millville, of the prosecutor's properties, as incidental to the

question of rates, the prosecutor employed the engineering firm of Day & Zimmerman to appraise the plant and furnish requisite information, to the respondent, on the question of what would be a just and reasonable rate, and also to advise the prosecutor what changes, if any, could be made with respect to the equipment and details of operation. Two of the engineers of Day & Zimmerman, Messrs. Loeb and Martz, were sworn.

Mr. Loeb testified that, from an inspection of the plant, he discovered that the hydro-electric and steam plants were not synchronized and recommended that this be done, which was done, and as a result, a material saving in fuel was the result. The details of this economy appear in Exhibit R 1, C., p. 252, l. 14.

Mr. Loeb also testified that the equipment in the steam plant was not obsolete, but of the same kind used in a great many steam plants today, and the same could be operated efficiently if the economies recommended by the engineers were adopted (C., p. 254, l. 28).

Mr. Loeb conceded that under normal conditions, a steam turbine would be preferable, but at the time the steam plant of the prosecutor was built, a difficult situation was facing them, and during the war period turbines were not obtainable within reasonable periods of delivery (C., p. 255, l. 10).

The average cost of generating power at the steam plant for 1922, with the month of December estimated, was 2.41¢ per k. w. With the economies recommended, Mr. Loeb thought the cost would be 15% less or 2.1 to 2.2 per k. w.

During the same period, the prosecutor was obliged to pay for power purchased, about 3¢ per k. w. (C., p. 257, l. 16).

Mr. Loeb also testified that other electric companies have equipment of the same character as is now used by the prosecutor in the steam plant. Babcock & Wilcox boilers are universally used and are of the standard type of water tube boiler. The Rice & Sargent engine up to the size of one thousand h. p. is very largely used (C., p. 258, l. 34).

Another economy suggested by Mr. Loeb was the installation of a proper exciter, which would save one hundred thousand k. w. a year in the use of the auxiliary power consumption (C., p. 280, l. 2).

A change in the steam meter on the engine was recommended by Mr. Loeb (C., p. 280, l. 10). The engineer for the municipality testified that one of the reasons for better efficiency in a turbine operation, compared with an engine-driven generator, is the shaft exciter generally installed in a turbo-generator. Mr. Loeb stated that this was not good practice in plants of the size of the prosecutor because the speed is entirely too high to make a satisfactory operating situation, and he gives instances to support his opinion with respect to this matter (C., p. 261, l. 28, *et seq.*).

The engineer for the municipality also testified that the water rate or pounds of steam, per k. w. used by the engine was about three and one-third times what a generating unit of this kind should use. Mr. Loeb made tests in conjunction with an engineer of the Rice & Sargent Company, manufacturers of the engine, and did not find the situation as disclosed by the municipality's engineer, and for the entire month of November, 1922, found that the average water rate was about one-half of that stated by the municipality's engineer. Mr. Loeb recommended the repair of the steam valves of the engine, which when finished, would, in his opinion, result in a

saving of about 13% of the quantity of fuel consumption (C., p. 263, l. 3).

The claim is also made by the municipality's engineer that the equipment of the steam plant was unreliable. Mr. Loeb stated that for the first twelve months of 1922, the engine was in continual operation. It was shut down for a few hours on Sundays to make minor adjustments and repairs, but out of a week of about one hundred sixty-eight working hours, the engine was usually in use one hundred sixty hours. Unfortunately the prosecutor has no spare unit, and the engine must carry the entire load at the station.

In the month of December, 1922, a crank pin was broken on the engine, and the latter has been under repair since that time. This refutes the claim of the municipality that, except for unforeseen breakdowns, the engine was unreliable in its operation (C., p. 263, l. 24).

The engine was a second-hand one bought during war times. The records of 1922, according to the testimony of Mr. Loeb, showed a fair reliability for the engine during that period, and while the percentage of outage for three years was higher than the turbine would have been for the first three years, at the end of five or eight years, the turbine would have to be re-bladed, and its outage might be anywhere from thirty to sixty days. At the end of the same period of the fifth or eighth year, each turbine, if operated a great number of hours, must, of course, go out of service for overhauling and repairs. The experience of Mr. Loeb was that every five or eight years, a turbine must be completely re-bladed, which is a long, expensive operation, and puts the entire machinery out of operation, unless there is a spare unit (C., p. 265, l. 4).

Mr. Loeb also said that engines of the same type, sixty years old, were used in New England at the present time (C., p. 266, l. 35).

In 1922, the outage of the engine in question, with the exception of the time it was broken down, was about eight per cent, and allowing eight additional per cent. for the month of December, when repairs were made, it would be sixteen per cent. for the entire year. Turbines one year old operated about seventy-seven per cent. of the time; in two years operated fifty-five to sixty per cent., and so on, as they get older, the percentage of operating time becomes less. In a survey recently made in New York City, turbines over eight years old were operating less than ten per cent. of the time (C., p. 267, l. 8).

Mr. Loeb frankly admitted that a turbine at Millville would be more efficient than the engine plant, but that the prosecutor could not "go back on hindsight" C., p. 268, l. 29).

The operating situation at Millville is somewhat peculiar. During a few hours a day, namely, between six in the morning until five at night, and again from eleven at night until six in the morning, the load is only 290 k. w's. This was during the fall of the year, when they had a lighting peak, and it was only during the hours that the residential customer and commercial customer require light that the peak comes to the capacity of the machine, which must be large enough to swing the load. This alone will account for inefficient operation. The average plant in a town of any size has a peak that extends throughout the day, because the power customers are using power at that time. This is the situation that the prosecutor was confronted with at the time the steam plant was installed (C., p. 269, l. 16).

Another economy suggested by Mr. Loeb was a reduction in the size of the transformer, and by the

use of two instead of three, losses would be cut down by one-third. Other minor economies were recommended, the effect of which would be to save several hundred dollars a year. The economies recommended would result in a saving of 13% of coal consumption (C., p. 271, l. 8).

A turbine, unless generating current to its full capacity, cannot be operated any more economically than can an engine operated by steam. The turbine has to meet peak load situation just like an engine does, and during nineteen hours of the day, a turbine at Millville would operate inefficiently compared with its ability to operate during the remaining five hours (C., p. 273, l. 12).

Mr. Loeb said that the fundamental difficulty in the operation of the Millville steam plant was that the load was not present during the entire twenty-four hours. The principal load is a lighting load, which, in the first place, has a fewer number of hours of duration, and in the second place, varies from season to season, being less in the summer months than during the winter time (C., p. 273, l. 30).

One of the operating difficulties was with reference to the condenser, and the engine got water in the cylinders instead of steam. An attempt was made to show that this was because the engine was no good and worn out. Mr. Loeb stated that was not the fact and that the same condition might happen to any engine, and that operating difficulties happen just every so often to most any plant, and that every efficient plant will have a wreck every so often. There is a falling down of the human and mechanical elements. It was not possible for the water to get in the cylinders as the result of a breaking of a pin (C., p. 275, l. 10).

In the operation of this company, it appeared that the amount of power purchasable was limited and

the amount of power generated by the hydro plant was limited, consequently the only other method of getting additional power was by the installation of another unit, and it merely became a question of the type of the steam plant put in, which was a matter of judgment and market conditions at the time (C., p. 277, l. 6).

Mr. Loeb stated that in his judgment the percentage of energy lost was not high for the kind of a plant the prosecutor was obliged to build. The percentage was quite consistent around 11½%, except probably a couple of years, which could properly be charged to inaccurate metering. He found that when the distribution conditions at Millville were considered, it would not be inefficient even if the loss were from 20 to 21%; in fact, it frequently goes to nearly 30% (C., p. 281, l. 20).

The engineer of the municipality also made the claim that the motor that drives the condenser pump is too large. This was refuted by Mr. Loeb, who says that it had to be that large, or it would not do its work. The pump has two functions to perform; one circulation of water through the condenser, and also to pick up the water from the basement under the engine room and force it through these spray nozzles and it requires an amount of power. The outfit is designed by a reliable manufacturer, who knew his business, and they put a right sized motor on it. Mr. Loeb fully explained this situation (C., p. 283, l. 3).

Mr. Loeb presented Exhibit R 3, which showed the economies he suggested, and about which he testified (C., p. 284, l. 4).

The engineer of the municipality also claimed that there had been a decided falling off of the current sold by the prosecutor because of the enforcement of the rates in existence during the period under con-

sideration. The result of Mr. Loeb's investigation is shown in Exhibit R 6. Except for the falling off of a power current as the result of industrial conditions, there was a marked increase after the rates were put into effect in the year 1920 and 1922, and in 1922, there was an increase from month to month (C., p. 405, l. 18), and except for the falling off by industrial depression, there was an increase in consumption on all class of customers.

Exhibit R 7 is a chart showing earnings and expenses from 1917 to 1922, and in the adjustments for the latter year, Mr. Loeb gave effect to all the economy possible (C., p. 407, l. 12).

Mr. Loeb also offered in evidence Exhibit R 8, which is a statement showing statistics from 1919 to 1922, and the adjustments for the latter year, results for possible economies, and division of charges for steam to gas company and for purchased power received and marked (C., p. 409, l. 32). This table shows operating expenses that have accrued principally in changes in production at the steam plant, had the economies been effected, placing new valves on the engine, new exciter, new feed pump and synchronizing the new plant (C., p. 410, l. 20).

Mr. Loeb testified as follows:

> "Q. Now your proposition is, with these im-
> "provements, changes and economies, bringing
> "about a greater efficiency, you can produce a
> "better result by continuing this steam plant
> "than if you abandoned the steam plant and re-
> "lied entirely upon the hydro-electric and pur-
> "chased power.
>
> "A. In 1922 the result would have been bet-
> "ter, and in succeeding years as the output of
> "the steam plant increased through what we
> "hope to be the continual growth of this com-
> "pany, the economy would still be greater.

"Q. Is the hydro-electric plant of sufficient "capacity to take care of the needs of the com- "pany?

"A. No, sir. Of course, at night time during "a certain portion of the year it takes care "very largely of the requirements of the com- "pany, but at all times, as far as I know—there "may be certain exceptions on Sundays or holi- "days—the steam plant or the other source of "power, the Millville Manufacturing Company, "must be relied upon to supply various amounts "of energy.

"Q. Do you think it would be more economi- "cal to continue this steam plant than to buy "your power at the new rate?

"A. This set proves that it would be more "economical in 1922, and on the theory that the "output of the steam plant will increase——

"Q. How about 1923? That is behind you "now.

"A. Three months. In general, as the steam "plant increases its output it burns more coal, "but certain of its other operating expenses in- "crease to an extent but not nearly in propor- "tion, so the greater output makes that margin "of cost per kilowatt increase as the output "continues. Of course you finally reach a point "where the engine is no longer large enough to "take care of the situation and then you must "introduce a new generating unit in this sys- "tem somewhere or arrange with the Millville "Manufacturing Company to purchase your ex- "cess requirements. That is a matter of eco- "nomics for the future to determine" (p. 412, l. 22 to l. 25, p. 413).

Mr. Loeb, during the years 1919 and 1920, was constructing power plants. He knew that during that time turbines and boilers were particularly difficult to get, and in certain instances, two years elapsed from the time of the placing of the order until the equipment could be delivered (C., p. 413, l. 25).

Mr. Loeb further stated that the probable cost of a modern turbine plant of 600 k. w., purchased in 1919 or 1920, assuming the delivery could be made within reasonable time, would cost $149,000, which would be a minimum figure (C., p. 414, l. 6).

The cost of the steam plant and equipment, as shown by Exhibit R 11, was considerably less than this sum (see printed exhibit, p. 266, *et seq.*),

The following questions, put to Mr. Loeb, and his answers, are important:

> "Q. Wouldn't it have been a considerable "saving if this turbine was put in and this plant "was junked?
>
> "A. There would be a very slight saving in "coal consumption at the present time, but very "slight indeed, because a turbine put in with an "eye for service two or three or four years in "the future would be larger than the present "requirements, and would be working at a lower "point of load than this plant. I offered an ex- "hibit to show how little this engine has to do "certain hours of the day, because the load is "primarily a lighting load and the hydro plant "has capacity to carry most of it. So I can- "not conceive of a modern machine earning its "fixed charges with the present load at Mill- "ville. As the load increases that situation will "change. In our own operation we find the "small units——" (C., p. 414, l. 20).

The following colloquy occurred between Commissioner Osborne and Mr. Loeb:

"Q. We are interested in determining "whether it would be more economical and ad- "vantageous, economical for the company and "advantageous to the consumers to junk this "steam plant and buy all your current.

"A. At the rate offered, the best rate offered "by the Millville Manufacturing Company, there "is no question in my mind but what the com- "pany should go on operating the steam plant "and these two figures here of total dollars "proves that. Their per kilowatt hour basis "would not prove it.

"Q. When you say that, you are referring to "R 8?

"A. Yes, sir.

"Q. The totals on the last two columns of "R 8?

"A. Yes, one of which is the best perform- "ance the steam plant produced and the other "is the best performance with purchased energy "at the rate made. If a very much lower rate "was made, that situation might be changed. It "is the best information we have as to the best "rate for purchased energy" (C., p. 418, l. 33 to 419, l. 15).

As to the condition of the steam plant, the testimony of Mr. Loeb is as follows:

"Q. (By Mr. Starr.) What have you to say "about the present condition of the efficiency "of the steam plant?

"A. The Commission recalls the engine was "thoroughly inspected by the chief engineer of "the company that today builds those engines "and he made certain recommendations as to

"what should be done physically to the engine "instead of to the plant as a whole" (p. 423, l. 9, to 17).

"Q. (By Mr. Starr.) Proceed, Mr. Loeb.

"A. The company authorized these changes "in the engine which had a two-fold purpose, "one to better the water rate and thereby burn "less coal to make the required kilowatt hours, "and second, to make the engine safer from "the governing standpoint. Those repairs have "been made. In addition, the company is mak- "ing changes which we, as engineers, have "called to their attention, economies through "a more efficient exciter and economies from a "better feed pump. The feed pump is in and "operating. The exciter is being installed, cer- "tain parts have not been received. The en- "gine has been overhauled and is operating. "Within the last few days the company had re- "quested the Hartford Insurance Company to "make an inspection of the engine with refer- "ence to placing an insurance policy on this en- "gine against certain kinds of breakdowns. "That inspection was made and the Hartford "Company agreed to carry insurance to a total "amount of about forty-three thousand dollars "as against accidents, provided the company in- "stalled a certain safety device which is has "ordered and which it will install as soon as it "can be delivered from the manufacturer. Pend- "ing the installation of that safety device they "are not running the engine actively on the to- "tal load" (C., p. 424, l. 32—l. 18, p. 425).

Commissioner Osborne inquired of Mr. Loeb the cost of the steam plant with the various conditions

and improvements as compared with the cost of new turbine and Mr. Loeb replied:

> "Undoubtedly the present day cost of a new "turbine of exactly the capacity required for "the plant would be slightly lower than the com- "pany might have paid for this engine during "the period of high prices, when the engine was "bought under stressed conditions" (C., p. 425, l. 20).

The value of the steam plant is shown by the testimony of Harvey R. Martz, one of the Day & Zimmerman engineers. Conferences were had between Messrs. Martz and Loeb, representing the prosecutor, Mr. Temple, representing the municipality, and Mr. Carver, representing the respondent, and the result of said conferences is found in the testimony of Mr. Martz, beginning (C., p. 434) and supplemented by Exhibit R 10, (C., p. 437).

(See also schedule of comparison of the different engineers' estimates of the value of the prosecutor's property, which is attached hereto.)

Exhibit R 19, C., p. 478, is the comparison of the price of current purchased during the month of November, 1922, from the Millville Manufacturing Company, with the current generated at the steam plant.

Mr. Franklin, on p. 481, described the latest breakdown of the engine.

SUMMARY OF FACTS REGARDING THE STEAM PLANT.

The prosecutor exercised its best business judgment and foresight, in the circumstances with which it was confronted, when it was advised by the manufacturing company that it would discontinue service.

Peculiar conditions existed at that time. Equipment was unobtainable quickly and money could not be readily secured. The purchase of second-hand machinery was, in light of the then present conditions, the best that could be done, otherwise, if the service be discontinued by the manufacturing company, the prosecutor would have been unable to perform its public function.

The rate, which was found to be unreasonable, as effective during the period covered by the investigation, was insufficient to provide adequate return upon the value of the prosecutor's property, without any regard whatever to the cost of the steam plant. Certainly, the steam plant was worth something, and we submit that the respondent, in arriving at a proper valuation of the prosecutor's property, was not warranted in eliminating the same altogether. According to the best judgment of the executives of the prosecutor, the capacity of the hydro plant had become inadequate to meet the demands on the system. Then it was that energy was purchased from the Millville Manufacturing Company to make up the deficiency. About 1915, the manufacturing company advised the prosecutor that it could not carry any further increased load and requested it to secure another source of supply. With insufficient capacity in the hydro plant and no source from which to purchase power, the prosecutor had

no other alternative than to build a power plant in order to give service to its customers. Important considerations of that time, from an engineering standpoint were location and size of plant to be built, and type of equipment to be installed. From this standpoint, the most desirable location for the new steam plant was that of the hydro plant site where certain economies could have been effected in condensing water and power plant labor, but according to undisputed facts this location proved to be impractical because railroad facilities could not be obtained for the delivery of coal. For these reasons, the plant was erected elsewhere.

Although the engineer of the municipality stated that the requirements of the municipality were too small to warrant the operation of the steam plant, yet experience has shown that any smaller size plant would have been inadequate. This is established by the prosecutor's exhibits, showing combined load curve of September 13, 1922 (Exhibit R 1, printed exhibits p. 132a).

Relative to type of generator equipment, there was a choice between turbo-generator and steam engine, and the company chose the latter, which they were justified in doing in the exercise of proper business judgment. Turbo-generators are most economical in large plants with good load factor and high vacuum; whereas, steam engines are most economical in small plants with poor load factor and comparatively low vacuum. Under ordinary circumstances about 500 k. w. is the dividing line. It was the opinion of the prosecutor's engineers that the company did not err in electing to install a steam engine instead of a turbine, because the required capacity was small, and the load conditions are very poor and because of the difficulty of maintaining a high vacuum during the summer months. Not only

were these conditions present at the time the steam plant was installed, but have continued to be so since.

The particular type of engine installed is modern in every respect. It is being built, and is operated in many plants at the present time. While the particular engine installed was purchased second-hand from a plant in which it has been giving satisfactory service about fifteen years, the life of such an engine is indefinite if properly cared for, and the fact that it had already been in service for fifteen years was no indication that it would not satisfactorily serve the needs of the prosecutor.

While it is also true that the boilers were purchased second-hand, they are of a modern type still made by Babcock & Wilcox Company, and are insured for a working pressure of one hundred eighty pounds, and should last for many years.

The criticism relative to auxiliary equipment, by the engineers of the municipality and of the respondent, are no longer pertinent, since changes have been made wherever economy can be effected.

The decision of the respondent is necessarily based upon a finding that the steam plant is useless, or, as characterized by the engineer of the municipality "a lot of junk." We contend that this characterization of the steam plant equipment is a gross exaggeration and without merit.

FACTS RELATING TO CERTAIN OPERATING EXPENSES DISALLOWED BY THE RESPONDENT.

Respondent (C., p. 23) criticizes the item of $7456, operating expenses for street lamp service as being excessive and far beyond similar expenditure by other comparable companies. This sum represents money actually expended, made necessary by the attitude of the municipality in the performance of the 1915 contract, while in existence, and also since the expiration thereof, during which the prosecutor has been furnishing current without any contract as to price (C., p. 23, l. 33).

The law expense of $6454 was also found to be entirely abnormal, and the respondent disallowed all over $2000. This item of expense was actually incurred by the prosecutor, for the reason that it was necessary to employ expert engineers to furnish information as to the value of the plant and the cost of operation, in view of the proceedings initiated by the Commission respecting the existing rates.

ATTITUDE OF MUNICIPALITY TOWARD THE RESPONDENT.

The present unsatisfactory financial condition of the prosecutor is due, in part to the attitude of the municipal authorities of Millville with respect to street lighting service. If the city were less arbiting in its requirements and more willing to pay a

reasonable rate for service required, the prosecutor would probably be in a position to reduce its rates to domestic and power consumers, as the prosecutor offered to do at one of the hearings before the respondent (C., p. 382, *et seq.*). The prosecutor has lighted the streets of Millville for the past twenty-five years. The last contract was made in the fall of 1915, for five years, and when it expired a couple of years ago, the prosecutor asked the city to renew it, but this has never been done (C., p. 307 l. 14). Upon the expiration of the 1915 contract, the prosecutor fixed a price higher than under the former arrangement, but lower than the rate effective in Bridgeton, Atlantic City, Vineland and other surrounding towns. The city refused to enter into a new contract, and the prosecutor in order to avoid the discontinuance of the service, has been furnishing current without any contract at all, and the city has been paying on the basis of the 1915 contract (C., p. 307, l. 25). The street lighting service has been furnished to the city for less than a cent and a half per k. w. hour. The power rate averages 5½¢ and the commercial lighting rate averages a little over 13¢ k. w. hour (C., p. 307, l. 36). Several times the city has been requested to make a new contract. Finally the prosecutor offered to enter into an arrangement with the city which contemplated a charge of about 12% above the old contract made in 1915, but the municipality would not accept the proposition but continued paying as theretofore on the old basis. Bills are rendered monthly at the new price as suggested by the prosecutor, and the city then makes a reduction, and sends a check for the difference. The city has arbitrarily fixed a price based upon the contract of 1915 and refuses to make any increased payment. This has been going on for two years, and the difference is about $40 a month

and that money is now owing to the prosecutor from the municipality (C., p. 308, l. 12). To demonstrate arbitrary attitude of the municipality, it was proven that the deposit of $2000 required by the city, upon submitting the proposal for a new contract, after the expiration of the old one, has been retained since 1920, and the city refuses to return it (C., p. 309, l. 9).

The actual loss entailed upon the prosecutor by reason of this conduct on the part of the city is between four and five thousand dollars per annum (C., p. 310, l. 1).

The finding of the respondent which resulted in the decision removed to the Supreme Court, was based largely upon alleged facts which were claimed to be set forth in a document produced on behalf of the municipality, and marked Exhibit P 31, found in the book of exhibits, p. 59, etc.

It was contended before the Supreme Court and now urged here that the respondent had no legal warrant or authority to use the facts contained in said Exhibit P 31, as a basis for its determination.

It is manifest that the respondent relied to a very substantial extent, upon the figures shown in this exhibit.

Table 1 (C., p. 20, l. 8), by which the respondent gives the estimated result of operation after entirely excluding the steam plant, is substantially based upon the opinion of Mr. Temple, as to what would be required under efficient and economical conditions as disclosed in such exhibit.

The respondent also took into consideration the computation of cost of street lighting services on the basis of two cents per k. w., also as set forth in P 31 (C., p. 23, l. 1).

Appendix to the decision includes (C., p. 38), the figures which appear in P 31.

We submit that the respondent was not warranted in making use of any of the facts stated in P 31, as a basis for its conclusion.

The history of this exhibit is somewhat peculiar. At one of the hearings when testimony was taken, Professor Temple presented a tabular statement showing the valuation he placed on the electric light property, exclusive of the steam plant, and he asked permission to typewrite the loose sheets. This privilege was granted (C., p. 484, l. 18). After the taking of the testimony was closed, Temple presented what purported to be a typewritten reproduction of the tabular statement showing his estimates of valuation. An examination, however, of this statement, as presented by Temple, showed conclusively that it went far beyond the scope contemplated by the privilege accorded him. Instead of being a typewritten résumé of the loose sheets presented by him at the hearing, he prepared and filed an exhibit of over fifty pages, giving his opinion with reference to many matters, far outside the permission as contemplated when he was shown such courtesy.

The correspondence between the attorney of the prosecutor and the members of the respondent shows conclusively that it was never understood that Professor Temple should have the right to file any such exhibit for evidential purposes. Letters passed back and forth until finally the clerk of the respondent advised the attorney of the prosecutor that the exhibit would not be accepted as evidence of the facts contained therein, and that it would merely be used by the respondent as a brief or a statement of the municipality's position. The prosecutor had objected to the use thereof for evidential purposes, without being given an opportunity to refute the statements of fact therein set forth, and insisted that the

case be reopened if any weight whatever was to be given the exhibit.

The attorney of the municipality objected to the opening of the case, and of the production of any further testimony, whereupon the clerk of the Board advised the attorney of the prosecutor that the exhibit would not be accorded any evidential value, but merely accepted as a brief of the contention of the municipality and the prosecutor should have the opportunity of replying thereto, which was done.

It is apparent, however, that the respondent mistook the understanding under which the paper was received, and based its decision largely upon the facts stated therein, which was manifestly improper. Many of the facts set forth in the decision as contained in Exhibit P 31, did not appear in the case in any other way. Consequently, it is manifest that the decision and the findings stated therein, as hereinbefore indicated, were based upon the facts which were not properly in evidence, and should not have been considered.

THE RELATION OF THE MILLVILLE MANUFACTURING COMPANY TO THE QUESTIONS HERE INVOLVED.

The prosecutor had a right to 100 h. p. of hydraulic energy, from a lake which was owned by the Millville Manufacturing Company, which right had been acquired from the latter corporation, and the practice had been for the manufacturing company to utilize all of the water power, when needed, and to furnish the prosecutor, and the Millville Water Com-

pany an allied corporation respectively, with the equivalent in electric energy, without charge. The excess electric energy furnished to the prosecutor by the Millville Manufacturing Company, however, was charged for at various rates.

The respondent found that the cost of current generated at the steam plant, due to poor load factor and various other circumstances, exceeded the price of current purchased from the Millville Manufacturing Company (C., p. 18, l. 10).

The decision of the respondent contained the following:

> "In making its estimates hereinafter, the "Board will therefore consider that all current "not generated in the hydro-electric plant will "be purchased at a price shown by the com- "pany's witnesses in Exhibit R 8, and all costs "relating to the construction and operation of "the steam plant will be eliminated for further "consideration herein" (C., p. 18, l. 20).

Consequently, the determination of the respondent with respect to the question of what should be a just and reasonable rate hereafter, is predicated upon the price of current which the Commission insists shall be purchased from the Millville Manufacturing Company in the future, without regard to whether or not it will be possible under all circumstances to obtain such energy from that source, as in the past.

Furthermore, the decision of the respondent, to the effect that the schedule of rates in operation by the prosecutor, at the time when the respondent initiated its investigation, which schedule is found to be unjust and unreasonable, was based upon a situation which showed, beyond any question, that the prosecutor was losing thousands of dollars every year, even at the rates charged. There is nothing

in the case to show that the prosecutor could, during the period under investigation, have abandoned the steam plant and purchased the requisite energy from the Millville Manufacturing Company. Undoubtedly the current generated by the hydro-electric plant would not be sufficient to supply the needs of the community.

The steam plan was excluded, absolutely, as property used and useful upon which the prosecutor was entitled to a reasonable return, covering the period under investigation, and, as already stated, nothing was produced to show that the prosecutor would have been able to obtain from any outside source, during the same period, electric energy as a substitute for that which was being generated by the steam plant. As pertinent to the question of the advisability of buying current from the Millville Manufacturing Company, not only in the past, but in the future, it was established and not contradicted that the prosecutor had never been able to make any definite or certain contract with the Millville Manufacturing Company for the purchase of power. The main reason for the construction of the steam plant, was the inability of the prosecutor to buy requisite current from the manufacturing company, when there was a need for more current than the hydro station could furnish. The prosecutor was advised by the Millville Manufacturing Company that the equipment of the latter was overloaded, and they wanted the prosecutor to get off their machines, and put in one of its own. After that, there was no certainty of receiving or buying any current from the Millville Manufacturing Company. This statement was made to the prosecutor by Mr. Lewis, the manager of the Millville Manufacturing Company (C., p. 291, l. 2). The prosecutor asked the manufacturing company to supply power at different times, and the latter

told the prosecutor that it could not do so. Also that it did not have the capacity as the manufacturing company's machines were overloaded and they had no thought to put in any extra ones. They, however, agreed to supply the prosecutor with breakdown loads at prices ranging from 2¼¢ to 3c per k. w. (C., p. 352, l. 9). This character of service did not meet the needs of the prosecutor.

Up to 1919, the Millville Manufacturing Company did not have the capacity for generating the current required by the prosecutor in addition to that provided by the hydro-electric plant, and Walter Wood, representing the prosecutor, and George Wood, representing the Millville Manufacturing Company, were never able to agree upon a price or the length of service. Apparently it was impossible to have them agree upon any definite or positive contract with reference to such service (C., p. 355, l. 18).

It is manifest, therefore, that the decision of the respondent respecting past rates and the determination of what should be a just and reasonable rate for service supplied in the future, is based upon a definite policy fixed and inflexible, on the part of the respondent, to compel the prosecutor to purchase current from the Millville Manufacturing Company, notwithstanding the fact that the latter will not obligate itself to supply such current for a definite price covering a designated period.

In these circumstances, the prosecutor will be at the mercy of the manufacturing company. Not only can it discontinue its service at any time, but the price of such service may be increased without any recourse by the prosecutor. The practical result of this situation, therefore, was in the past and now is that it is absolutely necessary for the prosecutor to provide additional equipment. This requirement

originally resulted in the construction of the steam plant; otherwise the prosecutor, might at any time, by the action of the manufacturing company have been put in a position of being unable to perform its public responsibility.

RELIEF TO WHICH RESPONDENT WAS ENTITLED UNDER THE WRIT OF CERTIORARI.

In view of the undisputed or at least, uncontradicted testimony that, notwithstanding the steam plant is not a modern one, the economies recommended by the prosecutor's engineers will result in efficient operation, in the generation of current, at a cost not in excess of the price at which it can be purchased from the Millville Manufacturing Company, we insist that the determination by the Board to disregard the steam plant entirely, was not a proper basis upon which to fix a just and reasonable rate for the future. The respondent should have put some value upon the steam plant upon taking into consideration the probabilities of its efficient operation, after the economies recommended by the engineers, had been effected, and such valuation should have been included, in the used and useful value of plant, upon which the prosecutor would be entitled to a return. The uncontradicted testimony of the engineers of the prosecutor showed what the result of operation would be after the economies were put into effect. This demonstrated conclusively that the steam plant was of some value and current could

be generated as cheaply as it could be purchased from the Millville Manufacturing Company.

The respondent, even under the broad powers conferred by the statute is not vested with the authority to direct the executives of the prosecutor how they shall manage the corporation and whether they shall generate current or buy it. Otherwise the Commission could, in every instance, substitute its discretion and judgment for the discretion and judgment of the directors of a Public Utility.

This situation is not contemplated by any of the provisions of the Public Utility Act.

The order appealed from should have been reversed and set aside and the record remitted, to the prosecutor with instructions to place a value, for rate making purposes, on the steam plant and also to make a determination with respect to the rates which were in existence during the investigated period with the steam plant at same value included, and also to fix a just and reasonable rate for the future, after providing thereunder, for a proper return upon the value of the entire property of the prosecutor, including therein the reasonable value of the steam plant.

MEMORANDUM OF AUTHORITIES.

A careful consideration of a number of rulings by Public Utility Commissions throughout the country shows that the general doctrine recognized with respect to the power of the Commission to interfere with the usual and ordinary management of a Public Service Company, is as follows:

"A Commission cannot substitute its judg-

"ment for that of the directors of a corporation,
"unless there is bad faith, or improper conduct,
"or there has been an abuse of discretion in the
"particular matter under consideration."

This proposition is supported by the following cases:

In Re Lizbon Light & Power Co., P. U. R. 1923, E. p. 400;
Detroit Edison Co., P. U. R. 1923, E. p. 845;
Columbus Gas Light Co., P. U. R. 1923, E. p. 602;
Meade Coal Co., P. U. R. 1923, E. p. 221;
Northern States Power Co., P. U. R. 1924, A. p. 325;
United Fuel & Gas Co., P. U. R. 1924, A. p. 357;
Pacific Tel. & Tel. Co., P. U. R. 1922, C. p. 248;
Latrobe Water Co., P. U. R. 1922, C. p. 811.

Our Court of Errors practically adopted the same principle in *Elizabeth v Board*, decided January 24, 1924, and reported in 123 Atl. 358.

COMMENT ON THE OPINION OF THE SUPREME COURT, THE CASES THERE CITED.

We have no criticism to make with respect to the general rules laid down in cases referred to in the Supreme Court's opinion, but the question was whether or not the respondent by the elimination of the steam plant as property upon which the appel-

lant was entitled to a fair return, acted in accordance with those principles.

The issue involved here is not so much the principles themselves as the application of them by the respondent.

The particular feature of the Tinturn Water Company case, 78 Eq., 71-83, which is applicable to the instant case is the finding of Vice-Chancellor Pitney, that he would not include the cost of a thirty-six-inch main because the same was too large and expensive, notwithstanding the fact that the water company installed such main to take care of anticipated business for a period of fifty years in the future. The Vice-Chancellor found that the installation should have been sufficient only to take care of service for a period of thirty years and instead of allowing the cost of eight miles of thirty-inch main at the cost of $300,000, allowed one-fourth thereof or $75,000.

It may be observed, in this connection, that the Vice-Chancellor did not entirely exclude the cost of the 36-inch main, as property upon which the water company was entitled to a proper return, but valued the same, for rate making purposes, at $75,000.

In the instant case the respondent allowed nothing whatever for the value of the steam plant, notwithstanding the fact that it had been erected in good faith under war conditions and, at the time of the hearing, was undergoing thorough rebuilding and repair, and the testimony showed that the plant, when repaired, would be so efficient, that current could be generated at a cost less than the prosecutor was able to then purchase the same, from the Millville Manufacturing Company.

The Supreme Court found that the value of the steam plant was upwards of $70,000, so that the question of the legal warrant, on the part of the Commission, to entirely disregard the value of the

steam plant for rate making purposes, is squarely raised, not only by the finding of the respondent, but also by the opinion of the Supreme Court, which resulted in the affirmance of the respondent's determination.

The Supreme Court evidently assumed that the respondent acted within its authority when it allowed a return of eight per cent. on its valuation of the plant. If the Commission improperly disregarded the steam plant, the prosecutor is entitled to have a return of eight per cent. on whatever the respondent should have found to be the value of the property, including the steam plant.

Undoubtedly the Supreme Court would have been obliged to set aside the finding of the respondent, as to the value of the prosecutor's property, if it was satisfactorily made to appear that the Board had reached an improper valuation and by the application of erroneous or illegal principles.

It was expressly so held by this Court in *Atlantic City Sewage Company v. Board,* 125 Atl., 327.

The latter case also held that rates fixed by the Commission must be based, not only upon consideration of revenue from the present business, but also on the probable future revenue, and further that a rate is not made for the immediate present only, but to provide proper return for a reasonable time in the future.

The respondent, in its finding expressly stated that the rates, as fixed, were to control in the future, and notwithstanding the uncontradicted evidence that the steam plant would become efficient by the repairs then being made, as a result of which current would be produced economically, the Board entirely disregarded this situation and based its conclusion upon the entire elimination of the steam plant notwithstanding that during the period the rates

would be in effect, the steam plant would be in operation and functioning satisfactorily.

Apparently this situation was not, in the faintest degree, taken into consideration, but the Commission arbitrarily disregarded the value of the steam plant and based its rates as if no such property was in existence.

COMMENT ON ARGUMENT OF COUNSEL FOR RESPONDENT.

Counsel for the respondent contended, in the Supreme Court, that the rate fixed by the respondent, as just and reasonable, was predicated upon the actual worth of the service performed, regardless of the value of the prosecutor's property, and that upon such basis a determination of the value of the property, used and useful, was entirely unnecessary and superfluous.

There is nothing in the record to justify such contention. This will appear from the following extract from the decision of the respondent.

> "In making its estimates hereinafter, the "Board will therefore consider that all current, "not generated in the hydro-electric plant, will "be purchased at a price shown by the com- "pany's witness in Exhibit R 8, and all costs re- "lating to the construction and operation of the "steam plant will be eliminated for further con- "sideration herein" (C., p. 18, l. 24).

The value of the prosecutor's property, exclusive of the steam plant, was found to be approximately

two hundred six thousand dollars, which was used on a basis for the fixing of rates (C., p. 19, l. 18).

The following extract from the decision of the Board shows precisely upon which the rates were fixed.

> "The Board, from calculations made, is of the "opinion that the schedule or rates hereinafter "described, will afford the company a just and "reasonable return on the property used and "useful, as hereinbefore set forth" (C., p. 24, l. 16).

There is nothing in the decision to justify the claim that the respondent ever made either an investigation or a finding as to the value of the service performed and fixed rates based thereon. It is manifest that the decision was predicated solely upon an attempted allowance, to the prosecutor of a fair return upon the value of the prosecutor's property, and such value, as found by the Board, expressly disregarded and excluded any value whatever of the steam plant.

It was also urged by the counsel of the respondent, that the latter would be justified in disregarding the cost or the value of the steam plant, because the same was erected without the authority of the respondent.

It is submitted that there is no provision in the statute, governing the respondent, which required the prosecutor to submit to the respondent plans with respect to the construction of the steam plant and receive its approval in advance of the work being done.

Respondent is not clothed with any jurisdiction whatever respecting the character of the equipment to be purchased or the plant to be erected. The jurisdiction is only conferred, indirectly, in case it

becomes necessary for the utility to borrow money on corporate securities to finance such construction work.

It was argued also that because the respondent had refused to sanction a bond issue, some years ago, the proceeds of which were to be used for the purpose of paying the cost incident to the additional equipment, including the steam plant, it had in some way, indirectly disapproved of the construction of the steam plant. There is nothing in the record to justify this assumption. The inference to be gathered from the testimony is that the Board disapproved of the bond issue because it would have been so much larger than the stock then outstanding. Fifty thousand dollars worth of stock was issued and outstanding, and because of the failure of those stockholders in control of the company to secure a two-thirds vote for the increase of stock, the Board would not approve of a bond issue where the issues of stock and bonds were so disproportionate. (P. 237, book of exhibits, l. 30).

The engineer for the municipalities was particularly vindicative in his criticism of the steam plant, although it appears by Exhibit R-18, p. 183 of Book of Exhibits, that the latter was installed and the property of the prosecutor materially expanded, under a contract of the municipality, in which he was named as supervising engineer.

The record is entirely barren of any objection on his part, at the time the work was being done, with respect to the character of the steam equipment being installed.

It is true that Mr. Franklin, the general manager of the prosecutor, stated that in his opinion the existing rates were too high.

A careful reading of the testimony (C., p. 361) shows that he did not concede that the rate was in

excess of what it should be under the then present conditions, which had to do with the limited consumption and poor load factors, but nowhere is there any admission, on the part of Mr. Franklin, that the rate produced more than the service was reasonably worth or that it was in excess of what would be a fair return upon the value of the property invested.

It was also argued below that there was no justification for the construction of the steam plant thirteen thousand feet away from the hydro-electric plant. This was fully answered by the testimony of Mr. Franklin above referred to, showing the physical conditions, and the impossibility of erecting a steam plant adjoining the water plant, because of the area of the latter and the lack of railroad siding facilities for the delivery of coal.

The decision of the respondent seems to have been based solely upon two factors, one of which is a return on the value of the property, excluding the steam plant, and the other revenue and operating expenses in the past. The rates fixed were to become effective December 1st, 1923, and continue in force thereafter.

The Board entirely disregarded the probable operating revenue and expenses in the future as based upon a rebuilding and repair of the steam plant. This situation as affecting the reasonableness of the rates in the future, was absolutely overlooked.

We submit that two very essential elements should have been considered by the respondent.

First, the proper determination of expense of operation, predicated upon the improved conditions at the steam plant and, second, the probable revenue therefrom. It then would have been in order to fix the rate, based upon the value of the entire prop-

erty, including the steam plant, at that time in operation and functioning satisfactorily.

The contention was also made below that the Board did not entirely exclude the value of the steam plant in the calculations upon which the rates were fixed.

It seems to us that this claim has no support whatever, because of the language used by the respondent in making its decision, above referred to.

We have been unable to find any facts stated in the decision, which support this statement, or the further claim that the rate was fixed so as to provide a return to pay the carrying charges on the steam plant.

What the Board did in fact, was to arbitrarily fix a rate based upon the price at which it was alleged the prosecutor could purchase current from the Millville Manufacturing Company, upon the assumption that all current not generated by the hydro-electric plant would be thus obtained. This finding was made regardless of the value of property or worth of service.

For the reasons stated at length in another portion of this brief, we insist that the Board exceeded its authority when it required that current should be purchased from the Millville Manufacturing Company, particularly in view of the uncontradicted testimony, that when the repairs to the steam plant were completed, current would then be generated, at a cost less than the price for which same could be purchased elsewhere.

In support of the contention that the respondent did not wholly exclude the value of the steam plant and that the rate was large enough to cover a sum sufficient to pay the carrying charges on the steam plant, the following quotation in the decision was re-

ferred to below by the attorney of the Board (C., p. 17, l. 30):

> "With respect to the property which is jointly "or entirely used for other than electric utility "purposes, the Board considers it advisable to "exclude the same entirely from the used and "useful property rather than include it and "then include it in the income, a sufficient rental "to pay the carrying charges on the property."

This statement was made not with respect to the steam plant, but as to the property owned jointly by the Millville Water Company, and the prosecutor. This is manifest from the context appearing on C., p. 17, l. 27.

It was also argued below from the foregoing excerpts that from the decision the Board did not entirely exclude the value of the steam plant, in fixing these rates. We contend that it appears as a fact, that it was never the intention of the Commission, in fixing the rates, to allow any return whatever on the steam plant, which was considered by the Board to be entirely useless and with nothing more than a junk value.

It is also argued below inferentially, that the prosecutor was not entitled to a fair return upon the value of the steam plant because no effort had been made on the part of the prosecutor to obtain current necessary to supply the customers in Millville, from either the electric company of New Jersey or the Atlantic City Electric Light Company.

We submit that the prosecutor, having a plant in Millville, was not obliged to purchase current from a concern which might become a competitor in supplying the territory covered by the prosecutor's franchise.

The same considerations, it seems to us, apply to these two corporations, insofar as prospective dealings with the prosecutor are concerned, as those incidental to the Millville Manufacturing Company, except that the supply of current by the latter is solely a matter of contract, as it could not be compelled to furnish current.

It is not the province of the respondent to arbitrarily determine where or from what source any electric public utility shall acquire current to supply its customers. Neither has the respondent any power to determine whether or not any such public utility shall manufacture or purchase current.

These matters are entirely within the determination of the executive officers of the utility.

During the argument in the court below, the attorney of the respondent, in support of the latter's finding, placed considerable reliance upon the facts set forth in P. 31, to which reference has already been made, and particularly to certain affidavits taken in Philadelphia respecting the operation of the steam plant equipment acquired there.

It seems to us that no use whatever can probably be made of the facts stated in this exhibit, for the reasons above given.

The suggestion was made at one of the hearings, that in view of the repairs then being made to the steam plant, the respondent should defer final action with respect to the fixing of future rates for a period of six months, or until it could be ascertained what effect, on the cost of producing current, would result from the reconstruction of the steam plant. This suggestion did not receive favorable consideration from the representatives of the municipality.

COMPARISON OF REPRODUCTION ESTIMATES MADE BY PROSECUTOR'S AND MUNICIPALITY'S ENGINEERS.

	Estimate of Prosecutor's Engineers.		Estimate of Municipality's Engineers.	
Hydro Electric Plant	$ 76,973	$ 60,719	$ 32,783	$ 16,874
Steam Plant	108,531	71,944	104,916	37,975
Distribution System	117,834	106,488	112,017	85,212
Other Property	1,630	1,102	1,630	903
Omissions and Contingencies	9,149	7,208	2,196	1,543
Total Labor and Material	$314,117	$247,461	$253,542	$142,507
Indirect or Overhead Costs	48,766	38,418	11,202	8,521
Total Physical Property	$362,883	$285,879	$264,744	$151,028
Working Capital	26,227	26,227	6,000	6,000
Going Concern Value	50,000	50,000		
Total Estimated cost of Reproduction of used and Useful Property.	$439,110 A.	$362,106 B.	$270,744 C.	$157,028 D.

A. represents reproduction value given by Engineers of the Prosecutor.

B. represents depreciated value given by Engineers of the Prosecutor.

C. represents reproduction value given by the Engineers of the municipality of Millville.

D. represents depreciated value given by the Engineers of the municipality of Millville.

MacCrellish & Quigley Co., Printers, Trenton, N. J.

NEW JERSEY
Court of Errors and Appeals

MILLVILLE ELECTRIC LIGHT COMPANY,
Prosecutor-Appellant,

vs.

BOARD OF PUBLIC UTILITY COMMISSION OF THE STATE OF NEW JERSEY,
Respondent.

On Appeal from the Supreme Court.

BRIEF ON BEHALF OF THE RESPONDENT.

The appellant has printed the record in three volumes. When reference is made to the small pamphlet part of the record it will be referred to as "case." In making reference to the proceedings before the Board the page numbers alone will be referred to and when referring to the volume of the exhibits the words "book of exhibits" will be used.

Statement of Case.

The respondent Board on the 29th day of October, 1923, by formal order determined that the schedule of rates, or charges, for electric energy made by the prosecutor prior to September, 1923, to the territories served, was "unjust and unreasonable," and respondent did in the same order determine and fix "just and reasonable" rates. It is this order (pp. 32 to 35) which

is removed to this court by the writ of certiorari. The decision as well as the supplementary decision upon which this order is based may be found in the state of the case, on pp. 15 to 31, inclusive, and pages 36 to 40, inclusive.

The appellant seeks to reverse a judgment of the Supreme Court (Case, pp. 3 to 6) wherein the order and decision of the respondent Board were affirmed. The prosecutor assigns two reasons for reversal (Case, p. 2), which assignments are based upon the same reasons for reversal as assigned in the Supreme Court (p. 525). The first four reasons thus assigned are based upon the alleged error of the respondent in declaring the rates charged prior to September, 1923, as "unjust and unreasonable." The fifth, sixth, seventh and eighth reasons are directed to the alleged failure of the respondent to consider as "used and useful" in rendering service to the public, a certain steam plant on the property of the prosecutor.

The court below (Case, p. 4) not only affirmed the decision of the Board, but also made the same determination on the facts presented by the record and the Court in its opinion used the following language:

> "A reading of the record leads us to the same conclusion as that filed by the Board. The order so made is supported by the evidence on which it is based."

Those findings of fact by the Supreme Court upon which the reversal is sought should not be reviewed in this Court.

Hackensack Water Co. v. *Public Utility Board,* 96 *N. J. Law, p.* 187.

Vreeland v. *Bayonne,* 60 *N. J. Law, p.* 168.

Beecher v. *Board of Street and Water Commissioners,* 65 *N. J. Law, p.* 307.

Tuckerton Railroad Co. v. *State Board of Assessors,* 77 *N. J. Law, p.* 614.

Outline of Litigation Before the Board.

On August 20, 1920,

(pp. 15, 41 and 49) the prosecutor filed with the respondent Board, a petition and a schedule of rates providing for an increase of 55%. Members of the respondent Board having been removed by the Governor on October 13, 1920 (*McCran* v. *Gaul*, 95 *N. J. L.* 352, *aff.* 96 *N. J. L., p.* 165), the prosecutor did on,

October 26, 1920,

(pp. 4 to 14, inclusive) file an amended schedule of rates.

On October 4, 1921,

After notice by the secretary of the respondent to the prosecutor (pp. 44 and 50), the matter of the amended schedule of rates filed by the prosecutor was brought to the attention of the respondent Board, which succeeded the members removed by the Governor. No action was taken by the respondent on the 4th day of October on the amended petition (pp. 41 to 45), and the matter was laid over "without day."

On December 13, 1921,

(p. 46) pursuant to a notice of the Secretary of the respondent (p. 50) the respondent on its own initiative, proceeded to take testimony upon notice and in the presence of all the parties interested, to determine whether or not the rates then in existence were "just and reasonable" (p. 55).

On February 23, 1921,

The prosecutor by writing, notified the Board, through its Secretary, that upon

filing the amended schedule of rates hereinbefore mentioned, the company sent the following notice to its customers:

"Electric Light Consumers.

TAKE NOTICE.

The Millville Electric Light Company petitioned the State Public Utility Commission last November for the following rates (as shown below) to cover increases of cost in the production and distribution of electric current.

The Commission suspended their adoption (or secured our promise to do so) of the rates for three months. This time having elapsed, the rates will now be put in force from the dates of the meter readings on the last of February.

So that all customers shall be treated with entire fairness, and not suffer any loss from the suspension of the Public Utility Commission, by the late action of the Governor, the Electric Light Company will, upon the payment of all bills, give the customer a receipt, guaranteeing to abide by the decision of the new Board, and if such calls for a rebate upon the payments already made, the Company will, upon the presentation of said receipt, promptly make any refund such decision shall call for or require.

We consider this proposition fair and reasonable to all interested parties" (p. 12).

This notice was also marked *Commission Exhibit P-1* (p. 519).

On October 3, 1922,

Upon notice and in the presence of all the parties interested, including the prosecutor, witnesses were produced who testified in the case. Testimony

was concluded on May 8, 1923, with 10 days allowed for the parties to furnish "additional data" (p. 485).

On August 22, 1923,

A decision (not order) of the respondent was filed (pp. 15 to 31, inclusive), in which the Board found the schedule of rates fixed by the prosecutor to be "unjust and unreasonable" (24). The Board also fixed rates which it determined were just and reasonable and in view of the public advertisement by the prosecutor, the Board *permitted* the rates to become effective as of January 1, 1923 (pp. 25 and 26).

On October 2, 1923,

The prosecutor having failed to allow the rebates according to the advertisement all of the parties in interest, including the prosecutor, upon notice, appeared before the Board to determine the reason for failing to allow the rebates (p. 486). The prosecutor through its counsel and manager stated the company did not allow the rebates promised in the advertisement, as the prosecutor considered the decision of Judge Tracy as a final and legal adjudication (bottom 216, top 217, 489 and 490). It further appears, the prosecutor obtaining a writ of certiorari after the filing of the decision of the Board on August 22, 1923, for the purpose of reviewing this decision. This writ of certiorari was set aside as there was no final order or determination by the Board that could be reviewed by this court (pp. 496, 522, 523).

On October 16, 1923,

Upon notice, all parties appeared before the defendant for the purpose of reopening the decision found by the Board and taking further testimony, if necessary, and making a supplemental decision and final order that might be reviewable by the court (p. 514).

On October 29, 1923,

A supplemental decision was made by the defendant wherein the Board repeated its finding of schedule of rates fixed by it as "just and reasonable" (pp. 36 to 40, inclusive).

On October 29, 1923,

The Board made a final order wherein it determined that the schedule of rates charged by the prosecutor prior to September 29, 1923, was not "unjust and unnecessary" and fixed as "just and reasonable" the schedule of rates referred to in supplemental decision. It was further ordered that the rates so fixed by the Board would become effective as of December 1, 1923.

History of the Company and Its Operation.

There are three sources of electrical energy available to the prosecutor (pp. 60, 63, 66). One source of supply is known as the hydro-electric plant, which is the property of the prosecutor and which was constructed before the defendant was created. The second source of supply is that of the Millville Manufacturing Company. This plant is not owned by the prosecutor, but supplies current to the prosecutor (p. 67). The third source of supply is the steam plant which is the property of the prosecutor.

The prosecutor began the purchase of units for this steam plant in 1916 and completed the purchases and put the plant in operation in 1920 (p. 290). *The alleged exclusion of the value of the steam plant is the cause of dispute in this case.* A geographical layout of these plants is shown on *Exhibit P-14.* The hydro-electric plant is situate 850 feet from the plant of the Millville Manufacturing Company. The steam plant, which is marked (3), is situate about 13,000 feet from the hydro-electric plant. *The steam plant was erected without the approval of the defendant,* in fact, applications were made to approve the issuance of securities to finance or pay for the construction of this plant and the defendant refused to approve the application (pp. 100, 157, 158, 162, 168 and 299). The units in this plant when purchased were second-hand and wholly unsuited for the purposes for which the plant was constructed (p. 116). The units were obsolete, inadequate in design, and the construction of the steam plant was unwise, unnecessary and developed without proper and adequate preliminary design and involved an imprudent and unwise investment (pp. 69, 98, 115, 173, 179, 180, 182, 188). As a result of the unfitness of the steam plant for the purposes for which it was constructed, the plant itself consumed, in the operation of its auxiliary equipment, 37.5 per cent. of the energy generated (p. 188). The steam consumption in this plant was so costly that it was and is ridiculous to operate the plant (pp. 77, 180, 182, 183). The unfitness of the plant resulted in an extraordinary consumption of coal and lubricants (pp. 77, 197). The units of the plant were oversized, producing an extraordinary loss in operation (p. 195).

While the prosecutor was constructing the steam plant, that is to say, from 1916 until 1920, current was being purchased and has ever since been purchased, notwithstanding the operation of the steam plant, from the Millville Manufacturing Company at approximately one-third the cost for which the current could be generated in the steam plant (Ex-

hibit P. 1, pp. 114 and 115), and when the steam plant was put in operation the units were so old and obsolete the plant would frequently get out of order and be shut down for several months at a time (pp. 209 and 210).

By operating the steam plant the prosecutor was losing over $30,000 a year (p. 203), that is to say, by purchasing all of the current that was necessary above the current generated by the hydro-electric plant, the current could be purchased at a price so much less than it would cost to generate the same in the steam plant so as to save by this operation the sum of $30,421 a year (*Exhibit P-11,* Table VIII). The energy records of power generated in the different plants and the power purchased are shown in *Exhibit P-1* (see also p. 68). A concise energy record from 1917 to 1922 is contained in a chart on p. 17 of the exhibits, and a summary of which (see bottom of chart) is as follows:

	1917	1918	1919	1920	1921	1922
Current from hydro-electric plant, .	25.8	31.7	39.1	22.6	29.1	35.2
Current purchased from Millville Mfg. Co., .	74.2	68.3	60.9	33.4	48.2	12.2
Current generated in steam plant,	0.0	0.0	0.0	44.0	22.7	52.6

The production and operating analysis of the energy produced by the prosecutor, as well as the energy purchased, is shown in the second chart of *Exhibit P-2* (p. 68, exhibit follows p. 16 of the exhibits). A note in the lower right-hand corner of this chart shows the comparative percentages. It appears the cost of generating the energy in the steam plant was 5.12 times the cost of the current from the hydro-electric plant and 3.22 times the cost of purchasing the energy from the Mill-

ville Manufacturing Company. Before the steam plant was put in operation in 1920, the cost of the hydro-electric current was 1.362 cents per kilowatt hour. The cost of power purchased from the Millville Manufacturing Company was 2.014 cents per kilowatt hour. The average cost of power produced was 1.798 cents per kilowatt hour (p. 81).

In 1920 the average cost of power was about 5 cents the first year the steam plant was in operation, notwithstanding the hydro-electric production in 1920 was 1.915 cents and the purchased power was actually 2.5 cents (*Exhibit P-1* and p. 68). The loss due to steam plant operation is shown for the years 1920, 1921 and part of 1922, that is, up to the time of submitting the exhibit in this case, as $70,983.15 (p. 203, *Exhibit P-15,* on p. 31 of exhibits) or an annual loss of $30,421.35. If the steam plant was entirely eliminated, that is, was not operated, the savings thereby together with the returns from other sources, would result in the year 1921 in a return of over 13 per cent. of the value new of the plant (p. 162, see also *Exhibit P-11*).

Other items besides the excessive consumption of coal and lubricants that enter into the losses in the operation of the steam plant were an annual maintenance cost of $17,600 (p. 83); the excessive cost for the operation of the company as a whole, in the necessity for maintaining two operating forces (p. 92) one at the hydro-electric plant and the other at the steam plant. At the steam plant the annual labor employment in 1921 was $4,151, which is equivalent to one cent in the rate (p. 92). In order to meet the annual loss of $30,000 there would be required in addition to the revenues received from the customers, the earnings on an endowment or capitalization fund of $507,022.50.

Valuation.

It was agreed between the parties that the inventories made by Day & Zimmerman would be accepted by all

the parties (pp. 124 and 444). It was also agreed that the engineers would get together and agree as far as they could upon the inventory and appraisal (p. 436).

After numerous conferences Mr. Carver, the Chief Appraisal Engineer of the Board of Public Utility Commissioners, testified to the valuation of the plant of the prosecutor (pp. 123, 169) all of which is fully explained by him in his testimony, and was again shown in exhibit form as *Exhibit P-11* (Book of Exhibits, pp. 3 to 16, inclusive). Using the Day & Zimmerman appraisal, Mr. Carver's testimony and exhibit show $209,122 as the present value of the plant less depreciation, excluding the steam plant and some minor items not used in the operation of the plant (Book of Exhibits, p. 9). *Exhibit P-11* (Book of Exhibits, pp. 4 and 5) shows a value of $259,702, from which an item of $25,524 was deducted because the High Pressure Construction Company, which constructed this plant, charged a contractor's profit of an average of about 30 per cent. The remaining deduction was that of the minor items. It appeared in the testimony that the High Pressure Construction Company was organized by the stockholders of the prosecutor and was managed by the same officers as the prosecutor, and that the profit was an inordinate and unreasonable one (p. 131). The testimony further showed that the usual profit allowed contractors was 10 per cent. (p. 130). Consequently, Mr. Carver, in his exhibit, allowed but 10 per cent. and made a deduction, accordingly, of $25,524. *Exhibit P-11* (Book of Exhibits, pp. 8 and 9) shows how the value of $209,122 was arrived at by this witness. This figure did not include a deduction that was made for the steam plant.

Mr. Temple, an expert produced on behalf of the municipality, testified that he is a professor of engineering and for several years has been consulting engineer, and his qualifications extend to electrical, mechanical and general engineering, chiefly electrical and mechanical; that he had practical experience in the installation of electric plant equipment and its operation; that he was

employed for a time by the General Electric Company in the manufacture of electrical equipment, was construction engineer with the Pocahontas Colliery Company and had charge of construction; that he was thereafter employed as engineer by the Bell Telephone Company in their cable engineering department; that he was instructor at the University of Pennsylvania for two years in charge of the electrical engineering department (pp. 60 and 61) and that during the war he was consulting engineer for the United States Government; that he was the city electrical engineer for the City of Millville and is thoroughly acquainted with the plants of the prosecutor (pp. 62 and 63).

This witness, after testifying in detail to the different items of valuation of the prosecutor's property, as well as operating costs, tabulated a statement showing the valuation of the prosecutor's property (p. 484). This valuation was placed in the form of an exhibit, *Exhibit P-31,* $119,054 (Book of Exhibits, pp. 59 to 114).

The operating expenses in this same exhibit may be found on pp. 115 to 150. A summary of this exhibit may be found on p. 103 of *Exhibit P-31,* Book of Exhibits.

The witness Temple also found the valuation of the steam plant, depreciated, as $37,975 (p. 97, Book of Exhibits, *Exhibit P-31*).

The witness Carver's valuation of $128,000 for the steam plant was based on the book costs that were charged on the books of the company for the items in this plant (see *Exhibit P-11,* Table V, p. 8, Book of Exhibits) while the valuation of the steam plant found by Temple of $37,975 was based upon an appraisal of the property from observation and inspection, exclusively from an engineering standpoint. The details of this valuation given by the witness Temple appears on pp. 93 to 97, inclusive, with full explanation of all items (*Exhibit P-31,* pp. 93 to 97, Book of Exhibits). The full explanatory notes also appear in the *Exhibit P-31,* made by the witness Temple of the valuation of other

properties of this company and may be found on pp. 59 to 74, inclusive, in the Book of Exhibits.

The Temple valuations are worked out from actual present-day prices with proper depreciations being allowed. The witness Temple in his valuation allowed 1.5 per cent. for omissions and contingencies, amortization and engineering 10 per cent., amounting to $8,521, and working capital in the sum of $6,000 (p. 103, Book of Exhibits, *Exhibit P-31*).

The witness Carver in his testimony and in his *Exhibit P-11* (Book of Exhibits, pp. 3 to 9, inclusive) allowed $15,000 for working capital and $20,000 for intangibles. Carver in his valuation allowed $20,000 for water rights of the hydro-electric plant. Temple in his valuation did not allow the $20,000 for this item for the reason that the water power was not being utilized to its full extent. The explanation for the exclusion by the witness Temple appears in *Exhibit P-31* (Book of Exhibits, p. 60).

Company's Valuation.

The company through its witness Martz introduced a figure for the valuation of this plant of $423,528 (p. 452). This figure included the valuation of the steam plant. After numerous conferences between the engineers, as heretofore referred to, this witness revised his valuation of the prosecutor's property, including the steam plant, to a total of $362,106, which is shown in *Exhibit R-10* (p. 209, Book of Exhibits).

The differences in the valuation as above set forth are as follows:

Comparison of Depreciated Values of Prosecutor's Property

	Prosecutor's Engineer	Municipality's Engineer	As Adopted by respondent
Hydro-electric Plant, ...	$60,719	$16,874	*$49,685
Steam Plant, ...	71,944	(a) 37,975	(b)
Distribution System, ...	106,488	85,212	
Other Property, ...	1,102	903	108,821
Omissions and Contingencies, ...	7,208	1,543	
Total Labor and Material, ...	$247,461	$142,507	$158,506
Indirect or Overhead Costs, ...	38,418	8,521	‡ 26,525
Total Physical Property,	$285,879	$151,028	$158,506
Working Capital, ...	26,227	6,000	15,000
Going Concern Value, ..	50,000		20,000
Est. Addns. to 7-1-23,† ..			12,000
Total Depreciated Cost of Property, ...	$362,106	$157,028	$205,506

* Includes $20,000 as value of water rights. Same is omitted in summary, P-31, but equivalent annual charge is included in operating expenses.

† Includes $10,000 of normal additions and $5,000 for replacements on account of improvements to hydro-electric plant and change of 6600 V circuit to 2300 V.

‡ Included above.

(a) Hypothetical value only of steam plant which Temple was requested to determine for use, if allowed, by the respondent (p. 456).

(b) The Board considered that all current not generated in the hydro-electric plant would be purchased at a price shown in *Exhibit R-8*.

Valuation Found by the Board.

Although the valuations do not agree, it will be readily seen that, excluding the value of the steam plant from the prosecutor's valuation, there is hardly any difference between the valuations as found by all the witnesses. Whatever differences do exist are clearly explained. The Board had before it, then, not only the proposition of valuing the property but also the problem of treating the steam plant in its valuation. It appeared in the testimony of Mr. Franklin, the manager of the prosecutor (p. 361) that the rates being charged were too high. His testimony on this point is (p. 361):

"Q. (By Commissioner Osborne.) Is there anything wrong with your salesmanship? A. Possibly might be, I don't know.

Q. Maybe that is the trouble. Maybe you are not delivering the goods the people want and the way they want it. A. The only trouble I can see is the price.

Q. Too high? A. *I acknowledge it is too high; I know it is too high.*"

It also appeared in the testimony (p. 215) that the rates had reached such a high peak the effect thereof was reflected in reduction in the consumption of current. The witness Temple clearly illustrated this in his testimony (p. 216) when reference was made to this subject:

"Q. What does that indicate, if anything? A. It indicates to me that the sales of revenue-producing power in this property are on the downward path at a tremendous rate. That is not due to the steam plant, that is due to the rate.

Q. You mean to say the rate is too high? A. No doubt about that."

In considering the value of the steam plant, therefore, the Board, according to the exhibits and testimony, was obliged to consider:

(1) That the prosecutor undertook the construction of the steam plant without the approval of the Board of Public Utility Commissioners. The construction was begun in 1916 and was not completed until 1920 and after being put into operation was out of repair most of the time.

(2) It appears also that the units of machinery and other equipment of the plant were over-sized, second-hand, obsolete and unfitted for the purposes for which they were installed.

(3) It also appeared that the operation of the steam plant resulted in an excessive maintenance charge of $17,000 a year in excessive expenses in the consumption

of lubricants and coal, in duplication of labor forces and administration, because the plant was separated over 13,000 feet from the hydro-electric plant.

(4) An operating loss of over $30,000 a year above the cost at which the current should be purchased from the Millville Manufacturing Company.

(5) That the steam and current generated in the steam plant was consumed in the operation of its auxiliaries to the extent of at least 30 per cent. of the entire amount of steam and current generated.

(6) It also appeared before the Board that the cost of generating electric current at the steam plant was five times that of the hydro-electric plant and over three times what it would cost to purchase the same current from the Millville Manufacturing Company.

(7) It also appeared by the admission of the company's own witness that the rates were too high. It also appeared that because of the high rates being charged, the consumption of current had come to the point of a very perceptible downward trend.

In the light of all the testimony and exhibits produced before the Board, in its decision which is the basis of the order being here reviewed, it found (p. 17):

> "The principal differences being the inclusion or exclusion of the steam plant as a whole and the property at the hydro-electric plant used jointly or entirely for the purposes of the water company. With respect to the property which is jointly or entirely used for other than electric purposes, the Board considers it advisable to exclude the same entirely from the used and useful property rather than include it and then include in the income a sufficient rental to pay the carrying charges on the property. The same allocation will be used as was submitted by the engineer for the municipality in the engineers' conferences and as is given in *Exhibit P-31,* to which allocation no particular criticism was made by the company's engineers."

And again on page 18:

> "The record shows that the cost of operating the steam plant as constructed by the respondent has, during the last three years, entailed operating expenses and taxes, without any return on the value of the steam plant, aggregating upwards of $70,000 in excess of the cost of current if purchased from the Millville Manufacturing Company, which, as has been above stated, has supplied the respondent with current required by it for some years.
>
> "The cost of current generated in this steam plant, due to poor load factor, installation of obsolete machinery, with excessive maintenance charges, as well as duplicated labor costs consequent upon the operation of two small plants located at a considerable distance apart in a single city, has largely exceeded the cost of current purchased from the Millville Manufacturing Company."

It appears, therefore, that while the Board excluded the value of the plant from used and useful property *rather than include it and then include in the income a sufficient rental to pay the carrying charges on this property, that is, the steam plant,* the Board in the consideration of the value of the steam plant, made due allowances for this item when it permitted a rate of return of such a large amount as to permit the company to purchase its current from the Millville Manufacturing Company instead of operating the steam plant at a loss. In this connection the Board held (p. 18):

> "In view of the facts in the case, the Board cannot consider as controlling the costs of operating the steam plant, which are in excess of what the same current output would cost if purchased from outside sources. In making its estimates hereinafter, the Board will therefore consider that all current not generated in the hydro electric plant will be purchased at a price shown

by the company's witnesses in *Exhibit R-8* and all costs relating to the construction and operation of the steam plant will be eliminated from further consideration herein."

It will be seen, therefore, that the Board did not entirely exclude the value of the steam plant. What it did was *to allow a sufficient rate of return to pay for the carrying charges of the plant and also allowed a sufficient rate of return to enable the company to purchase current from available sources,* in fact, sources which had been drawn upon for many years uninterruptedly.

Rate of Return.

By the company's *Exhibit R-8* (Book of Exhibits, p. 284) a claim was made for $84,085 for all operating expenses, including taxes and general amortization, which according to the testimony of the prosecutor's witness Franklin, included an item for amortization of the steam plant. In this connection the testimony of the witness Franklin is as follows:

"Q. (By Commissioner Osborne.) If you abandoned your steam plant because it was not economical to operate, then that overhead would be eliminated, wouldn't it, because the property would not be used and useful? A. It would be a loss to us, however, I do not see how you can get out of that part of it; it would be a loss to us.

Q. Have you amortized it in any way? A. We are amortizing it every year.

Q. Making provisions for it? A. Yes."

The witness Temple in *Exhibit P-31* (Book of Exhibits, p. 144) shows a most careful itemization of the operating expenses which amount to $38,831. This does not include taxes (from the exhibit of the company, *R-8*) which amount to $9,132, and uncollectible bills in the sum of $37. It would give a total operating expense from Temple's computation of $48,000.

The Board in considering the subject of operating expenses (p. 23) refers to *Exhibit R-8* of the company and explains the deductions that should be made from the figure of $99,517 set up by the company. The Board's decision on this item is as follows:

> "On the basis of operations during the year 1922 the company's expert in *Exhibit R-8,* set forth in Table I, claims that the revenue deductions of the company without the steam plant being considered would aggregate $99,517. Certain items are included in this estimate which do not belong there and others are very much larger than would be justified under efficient management. For instance, the cost of repairs of electric equipment in the station should not aggregate $1,200, especially in view of the provisions hereinbefore made for the replacing of quite a considerable amount of this equipment. The item of $2,400 for production expenses in the steam plant would not exist if the steam plant were discontinued. If the current unaccounted for were reduced to the average of the last five years the amount of current purchased to supply the demand of 1922 would ve very materially decreased and the cost of purchased current would be accordingly decreased. The operating expenses for street lamp service aggregating $7,456 is excessive and far in excess of similar expenditures by other comparable Companies. Law expenses of $6,545 are entirely abnormal and this item under ordinary circumstances and as compared with other utilities similarly situated, should not amount to $2,000. Insurance, without a steam plant in existence, would be cut substantially in half. Depreciation, taken at $11,697, would normally be reduced to $5,800, to which the Board has hereinbefore indicated that $500 for special depreciation should be added for a five-year period.

"If all these adjustments were made and increases in revenue due to adjustments of street lamp rates be made effective, and the very considerable increase in commercial street lighting indicated by the reports for 1923 are taken into consideration, the net operating revenue of $24,512 shown on the company's estimate would be very materially augmented.

"The Board, from calculations made, is of the opinion that the schedule of rates hereinafter prescribed will afford the company a just and reasonable return on the property used and useful as hereinbefore set forth."

It will be noticed that the Board reduced this item to about $83,000 and in the decision of the Board it is shown that the difference is made up by the allowance of $1,200 for electrical equipment which is taken care of by the Board in its valuation for replacing a considerable amount of the property. It also follows that there will be a reduction of $2,400 for production expenses if the steam plant is shut down. It appears further by *Exhibit R-8* that the street lighting expenses were abnormal, having risen from $4,171 in 1920 and 1921 to $7,456 set up by the company in *R-8* for 1922. The city's exhibit shows that the amount should be $3,303 (*Exhibit P-31*, Book of Exhibits, p. 141). The law expense item in the company's *Exhibit R-8* in the sum of $6,454 was also abnormal, as the item set up for 1922 in the exhibit of the company is $6,454 when the previous years show that it was less than $1,500 and experience of other companies shows that this amount is usually about $2,000.

The insurance of the company previous to the operation of the steam plant was $418 (*Exhibit R-8*). With the steam plant in operation it amounted to $2,499 and the company set up as a total insurance figure for 1922 in *Exhibit R-8* the amount of $2,792. The Board concluded if the steam plant was not operating the

amount of insurance would be at least half, which is a very generous allowance.

The other figure that was set up by the company was that of $11,697 for depreciation. This was shown for the year 1922. In the year preceding this was but $400. The Board held that under the testimony this figure should be $5,800, although the Board did not allow the sum of $500 for additional depreciation, which allowance is more particularly referred to in the Board's decision in "Annual Depreciation" (p. 19).

Revenue.

The revenues set up by the company in *Exhibit R-8* are $124,029 under the rates put into effect by the company but not approved by the Board. If there is deducted from those gross revenues the total operating expenses, including insurance and amortization, of about $83,000 found by the Board, you will have a net return of $41,000. On a valuation of $206,000, found by the Board, this would leave a net return to the company of about 20 per cent., which, of course, is entirely too high and unjust and unreasonable.

Figuring the different classes of rates allowed by the Board (pp. 24 to 26, inclusive) there would be a gross return of $96,600, which is based upon sales existing in 1922. If there is added to this a 5 per cent. increase in the consumption by domestic customers only, there would be an increase of $2,548. That this is a most conservative estimate, as the consumption has increased at least 10 per cent. because of the rate reduction fixed by the Board. Taking, then, a round figure of $100,000 as being the possible revenues to be derived from the rates fixed by the Board, it would leave a net return to this company of 8 per cent., which, of course, is a just and reasonable return.

LAW.

I.

The respondent has power to fix just and reasonable rates and to initiate proceedings for that purpose.

The only question in this case is whether the rates fixed by the defendant are "just and reasonable." The power resting in the Board to fix the rate is found in Sec. 16, sub-division (c), P. L. 1911, p. 376; also in the first supplement, C. S., p. 1277, which is as follows:

> "Sec. 16 (c). After hearing, upon notice, by order in writing, to fix just and reasonable individual rates, joint rates, tolls, charges or schedules thereof, as well as commutation, mileage and other special rates which shall be imposed, observed and followed thereafter by any public utility as herein defined, whenever the board shall determine any existing individual rate, joint rate, toll, charge or schedule thereof or commutation, mileage, or other special rate to be unjust, unreasonable, insufficient, unjustly discriminatory or preferential."

That the rates being charged by the prosecutor were too high was conceded (p. 361). The proof in the case, to which reference has heretofore been made in this brief, leaves no doubt that the rates being charged by the prosecutor were not only too high but unreasonable and unjust and far above that being charged in other communities of a like kind as served by the prosecutor and the rates were far in excess of what the current could be purchased from other sources. Under those circumstances it was the duty of the Board to initiate proceedings and fix a "just and reasonable rate" and this the defendant had power to do.

Public Service Gas Co. v. *Board,* 84 N. J. Law, at p. 468.

The rate-making power calls for a range of legislative discretion on the part of the defendant.

Justice Hughes in *Simpson* v. *Shepard,* 230 U. S., at p. 433, on this point said:

> "The rate making power is a legislative power and necessarily implies a range of legislative discretion. We do not sit as a board of revision to substitute our judgment for that of the legislative, or of the commission lawfully constituted by it, as to matters within the province of either."

The burden of proof is on the prosecutor to show that the rates fixed by the defendant were unjust and unreasonable.

In the *City of Elizabeth* v. *Board of Public Utility Commissioners,* 123 Atl. Rep., at p. 359 (Court of Errors and Appeals decision), it was held:

> "The burden is on the prosecutor to show in what respect the order impairs its substantial right. The Public Utilities Act, Sec. 38, as amended by Act Feb. 26, 1918 (P. L., p. 304), Sec. 1, provides that 'No such order shall be set aside in whole or in part for any irregularity or informality in the proceedings of said Board unless such irregularity or informality tends to defeat or impair the substantial right or interest of the prosecutor in certiorari,' "

See also:

Railroad Commission v. *Cumberland T. & T. Co.,* 211 U. S. 414;

Simpson v. *Shepard,* 230 U. S. 352;

Des Moines Gas Company v. *Des Moines,* 238 U. S. 153.

There is a strong presumption in favor of the conclusions reached by the respondent.

In *Railroad Commission* v. *Cumberland T. & T. Co.,* 211 U. S. 414, the Court, by Mr. Justice Peckham, said:

"Like any other case, the onus rests upon this complaint to prove the existence of the fact it alleges, viz: that the rates are so low as to be confiscatory, or at least unreasonable and unjust. The court below held that the rates actually established by the commission were void, because, as was stated by the court, those rates were not established upon investigation into the question of their sufficiency, but by a merely arbitrary conjecture by the commission, not based on investigation or the exercise of judgment and discretion, and the order promulgating the establishment of the rates was, therefore, illegal and void, and hence there was no presumption of the correctness of the rates as generally obtains in relation to rates adopted by the legislature or a commission appointed by it" (cases cited).

"We are of opinion that the court below erred in the conclusion that there was no presumption in favor of the validity of the rates promulgated by the order No. 552. We think the evidence shows that these rates were really not adopted by arbitrary conjecture, nor does it show that they were based on no investigation, or without the exercise of judgment or discretion."

In *Darnell* v. *Edwards,* 244 U. S. 546, the Court by Mr. Justice Pitney, said (569):

"It is well established that in a question of rate making there is a strong presumption in favor of the conclusions reached by an experienced administrative body after a full hearing."

In the *Public Service Gas Co.* v. *Board,* 84 *N. J. Law, at p.* 468, Justice Swayze, writing the opinion for this Court, said:

"If there is any presumption in favor of the order of the commissioners, it depends, like the opinion of the court of another State, upon the strength of the reasoning by which it is supported. This is subject, however, to the qualifica-

tion that in legislative action the courts will not merely substitute their judgment for that of a legislative body."

See also *Atlantic City Sewerage Co.* v. *Board,* 125 *Atl. Rep., p.* 327. (Court of E. & A. 1924.)

VALUATION.

II.

The value found by the respondent of the prosecutor's property was the fair present value of the property of the defendant which was reasonably necessary for the public service.

According to the testimony in the case, the center of the dispute between the parties is the alleged exclusion of the valuation of the steam plant. A careful reading of the decision of the Board (pp. 17 to 19) discloses that the Board did not entirely exclude the valuation of the steam plant. As hereinbefore stated in this brief, the steam plant having been erected without the approval of the Board, the units having been purchased second-hand and wholly unsuited for the purposes for which they were intended and the plant being obsolete, inadequate in design, and the construction of the steam plant being unwise and unnecessary and developed without proper and adequate preliminary design and involved an imprudent and unwise investment, and it appearing that the plant consumed in its operation of its auxiliary equipment 37.5 per cent. of the energy generated and that the steam consumption was so costly as to be ridiculous to operate the plant and it appearing that the operation of the plant required an extraordinary consumption of coal and lubricants, and that the steam plant was oversized and produced a loss of thirty thousand dollars a year in its operation, and it also appearing that it cost over five times as much to generate energy on the steam plant as on the hydro-electric plant and over three times the cost of purchasing the energy from the Millville Manufac-

turing Company, and it appearing also that there was an excessive cost of annual maintenance of over seventeen thousand dollars; the Board "considered it inadvisable to exclude the steam plant from the used and useful property rather than include it *but include in the income a sufficient rental to pay the carrying charges of the property;* that is to say, the Board allowed a sufficient rate of return for this Company not only to make a fair and reasonable profit but also a sum was allowed in the rate of return sufficient to pay the carrying charges of the steam plant which included an amortization item, so that the prosecutor was allowed by the decision of the Board a fair return and the carrying charges which included amortization of the steam plant. The Board also allowed an extra five thousand in the valuation for a further installment of equipment in the hydro-electric plant (p. 19) and this allowance was made even though the item was not actually installed. While it may be said that the steam plant was devoted to public use *it cannot be said that it was reasonably necessary for public use.* The fact that the prosecutor invested money in the erection of the steam plant is no reason why it should receive a return on that investment because *after all the test of the fair value of the property to be considered must include the service that is being rendered and the cost of the service.*

As said in the case of *Smyth* v. *Ames,* 169 *U. S. at p.* 547:

> "What the public is entitled to demand is that no more be exacted of it for the use of a public highway than the services rendered by it are reasonably worth."

As said by Justice Peckham, in the case of *Stanislaus County* v. *San Joaquin and King's River Canal and Irrigation Company,* 192 *U. S. at p.* 252:

> "To take the amount actually invested into 'estimation' does not mean necessarily that such amount is to control the decision of the question of rates."

The test of all the decisions in the United States Supreme Court are to the effect that the property upon the fair value of which a Utility is entitled to an opportunity to earn a fair return is *not all of its property, nor even all of its property devoted to the public use* **but only such of its property devoted to public use as is reasonably necessary for public purposes.**

The actual value of a plant may in some cases be enhanced by the fact that it is reasonably necessary. This actual value would be "true value" for the purpose of taxation, it could not, however, be "fair value" for the purpose of rate making. What is measured in taxation is the value of the property possessed; what is measured in rate making is the value of the property possessed *reasonably necessary* in and for the performance of the public service.

As said in the case of the *City of Springfield* v. *Springfield Gas & Electric Co., 125 N. E., page 891*:

> "Each case must be considered on its own merits and such result of value arrived at as may be just and right in each case."

And again in *Simpson* v. *Shepard, 230 U. S. 352* (the Minnesota rate case), in speaking about "fair value":

> "The ascertainment of that value is not controlled by artificial rules. It is not a matter of formula, but there must be a reasonable judgment, having its basis in a proper consideration of all relevant facts."

The same force of reasoning may be found in the decision written by Justice Swayze in *Public Service Gas Co.* v. *Board of Public Utility, 84 N. J. Law, p. 463*, wherein he said, in speaking of the rates which has the same application to valuation:

> "That it is not a question of legal formula is shown by the decision that a rate may be reasonable although it fails to produce an adequate return to the Public Service Gas Company owing to the fact that business has not developed suffi-

ciently to be remunerative or to the fact that the plant is on a larger scale than is justified by the present demand."

See also *Atlantic City Sewerage Co.* v. *Board,* 125 *Atl. Rep., p.* 327. (C. of E. & A. 1924.)

In determining the allowance for operating expenses inefficient operation increasing the cost of operation beyond normal cost should be taken into account.

Reagan v. *Farmers' Loan & Trust Co.,* 154 U. S. 362.

Mr. Justice Brewer, delivering the opinion of the Court:

"It is unnecessary to decide, and we do not now wish to be understood as laying down as an absolute rule, that in every case a failure to produce some profit to those who have invested their money in the building of a road is conclusive that the tariff is unjust and unreasonable. And yet justice demands that everyone should receive some compensation for the use of his money, or property, if it be possible without prejudice to the rights of others. There may be circumstances which would justify such a tariff. There may have been extravagance *and a needless expenditure of money.* There may be *waste in the management* of the road, enormous salaries, *unjust discrimination as between individual shippers, resulting in general loss* * * * Doubtless, too, there are many other matters affecting the rights of the community in which the road is built as well as the rights of those who have built the road."

Wyman in his work on "Public Service Corporations," section 1151, states the proposition as follows:

"Before there can be any question of income on the capital employed, the necessary annual charges must be met by the rates; and first of

all the actual cost of service furnished. This involves most obviously the payment of wages, and the purchase of current supplies. The general principle was concisely stated by Mr. Justice Brewer in *Chicago and Northeastern Railway* v. *Dey*, 35 *Fed.* 866, 'Cost of service implies skilled labor, the best appliances, keeping the roadbed and cars and machinery and other appliances in perfect order and repair. The obligation of the carriers to the passenger and the shipper requires all these.' * * *

"It should, of course, be said that it does not follow in every case the company will be entitled to credit for all of its current expenditures. Reckless and unnecessary expenditures, not legitimately incurred in the actual operations of the company cannot be allowed."

City of Lima v. *Public Utilities Commission*, 106 Ohio 559, 140 N. E. 398.

Per Curiam:

"Certainly 'economical and efficient administration' is one of the factors to be considered in the fixing of rates, and is an element generally recognized by state commissions. Otherwise a utility might rest upon the assumption that an increase should be awarded even though the commission should find that by elimination of waste and efficient management lesser rates would be justified."

RATE OF RETURN.

III.

The rate of return allowed by the Board was a just and reasonable rate.

In the case of the *Public Service Gas Co.* v. *Board of Public Utility*, 84 N. J. Law, p. 468, through Justice Swayze, in referring to what is meant by a just and reasonable rate, said:

"On the one hand a just and reasonable rate can never exceed, perhaps can rarely equal the value of the service to the consumer. On the other hand it can never be made by compulsion of public authority so far as to amount to confiscation. A just and reasonable rate must ordinarily fall somewhere between these two extremes so as to allow both sides to profit by the conduct of the business and the improvements of methods and increase of efficiency."

"Justice to the consumer ordinarily would require a rate somewhat less than the full value of the service to him; and justice to the company would ordinarily require a rate above the point at which it would become confiscatory. To induce the investment and continuance of capital there must be some hope of gain commensurate with that realizable in other business; the mere assurance that the investment will not be confiscated would not suffice."

"A just and reasonable rate is rather a question of business judgment than one of legal formula, and must often be tentative, since the exact result cannot be foretold. Like so many other questions that involve the reasonableness of conduct, it is a question of fact to be settled by the good sense of the tribunal hearing the matter. That it is not a question of legal formula is shown by the decision that a rate may be reasonable, although it fails to produce an adequate return to the public service company, owing to the fact that business has not developed sufficiently to be remunerative, or to the fact that the plant *is on a larger scale* (italics ours) than is justified by the present demand. The real test of the justice and reasonableness of an individual rate seems to be that it should be as low as possible and yet sufficient to induce the investment of capital in the business, and its continuance

> therein. This is also a business question, and depends on the opportunities that may be offered for more profitable investments, and the risk involved. In determining the justice and reasonableness of rates, perhaps no better test can ordinarily be found than the rates customarily charged in localities similarly situated, although even this is not an infallible test."

There is no particular rate of compensation which must be afforded in order that the requirement of a "fair return" be met.

No invariable rule as to what constitutes a "fair return" can be laid down.

In *Willcox* v. *Consolidated Gas Company of New York,* 205 U. S. 19, Mr. Justice Peckham, delivering the opinion of the Court, said:

> "There is no particular rate of compensation which must, in all cases and in all parts of the country, be regarded as sufficient for capital invested in business enterprises. Such compensation must depend greatly upon circumstances and locality; among other things, the amount of risk in the business is a most important factor, as well as the locality where the business is conducted, and the rate expected and usually realized there upon investments of a somewhat similar nature with regard to the risk attending them."

Bluefield Waterworks & I. Co. v. *Public Service Commission of West Virginia,* 262 U. S. 679.

Mr. Justice Butler, delivering the Court's opinion:

> "What annual rate will constitute just compensation depends upon many circumstances, and must be determined by the exercise of a fair and enlightened judgment, having regard to all relevant facts. A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the

> convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties, but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to secure confidence in the financial soundness of the utility and should be adequate, *under efficient and economical management* (italics ours), to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties. A rate of return may be reasonable at one time and become too high or too low by charges affecting opportunities for investment, the money market and business conditions generally. * * *"

The rate of return allowed by the respondent in this case meets all of the tests mentioned in the above quoted cases. By the exercise of ordinary business judgment the prosecutor will have no difficultly in realizing the return allowed by the Board which is computed in this brief to amount to a net return between 7 and 8 per cent. and for the same reason applied by this court in the case of *Atlantic Sewerage Co.* v. *Board*, 125 Atl. Rep., p. 327, the order of the Board should be sustained.

VALUE OF SERVICE.

IV.

The public utility is entitled to an opportunity to earn a fair return upon the fair value of the property employed by it in the public service; such right, however, is qualified by the fact that the public is entitled to demand that no more be exacted of it than the service rendered is reasonably worth.

In *Smyth* v. *Ames,* 169 U. S. 466, Mr. Justice Harlan, delivering the Court's opinion, said:

> "What the company is entitled to ask is a fair return upon the value of that which is employed for public convenience; on the other hand, *what the public is entitled to demand is that no more be exacted from it for the use of a public highway than the services rendered by it are reasonably worth.*"

In *Simpson* v. *Shepard,* 230 U. S. 352 (Minnesota Rate Case), reiterated this statement.

In *Brunswick and J. Water District* v. *Maine Water Co.,* 99 Me. 371, 59 Atl. 537, Judge Savage, laying down rules to govern appraisers in making a valuation of property of the Maine Water Company for purposes of purchase by the Water District, said:

> "They are entitled to charge reasonable rates. 'Reasonable' is a relative term, and what is reasonable depends upon many varying circumstances. An equivalent to the prevailing rate of interest might be a reasonable return, and it might not. It might be too high or it might be too low. It might be reasonable, owing to peculiar hazards or difficulties in one place to receive greater returns there than it would in another upon the same investment. Then, their reasonableness relates to both the company and

the customer. *Rates must be reasonable to both, and if they cannot be to both, they must be to the customer.*"

Covington & Turnpike Co. v. *Sandford,* 164 U. S. 578, Mr. Justice Harlan, delivering the Court's opinion, said:

"When the question arises whether the legislature has exceeded its constitutional power in prescribing rates to be charged by a corporation controlling a public highway, stockholders are not the only persons whose rights or interests are to be considered. *The rights of the public are not to be ignored.* It is alleged here that the rates prescribed are unreasonable and unjust to the company and its stockholders. *But that involves an inquiry as to what is reasonable and just to the public.* If the establishment of new lines of transportation should cause a diminution in the number of those who need to use a turnpike road, and, consequently, a diminution in the tolls collected, that is not, in itself, a sufficient reason why the corporation operating the road should be allowed to maintain rates that would be unjust to those who must or do use its property. *The public cannot properly be subjected to unreasonable rates in order simply that stockholders may earn dividends.* The legislature has the authority, in every case where its power has now been restrained by contract, to proceed upon the ground that the public may not rightfully be required to submit to unreasonable exactions for the use of a public highway established and maintained under legislative authority. If a corporation cannot maintain such a highway and earn dividends for stockholders, it is a misfortune for it and them which the Constitution does not require to be remedied *by imposing unjust burdens upon the public.* So that the right of public to use the plaintiff's turnpike

> upon payment of such tolls as, *in view of the nature and value of the service rendered* by the company are reasonable, is an element in the general inquiry whether the rates established by law are unjust and unreasonable."

San Diego Land & Town Co. v. *City of National City*, 174 *U. S.* 739, Mr. Justice Harlan, delivering the opinion of the Court said:

> "The basis of calculation suggested by the appellant is, however, defective in not requiring the real value of the property and *the fair value in themselves of the services to be taken into consideration.*"

Southern Pac. Co. v. *Bartine*, 170 Fed. 725. Farrington, District Judge:

> "It does not necessarily follow that a schedule of maximum rates fixed by law is confiscatory because it fails to yield a reasonable return on the investment above taxes, operating expenses and interest on the indebtedness. *The rates must be reasonable to the company, but they must, in any event, be reasonable to the public.* If a railroad is built into a new, sparsely settled territory with a view of serving a large future population and developing business, the Constitution does not require the few people and the small business of the present time to pay rates which will yield an income equal to the full return to be gathered when the country is populated and business developed to the full capacity of the road."

Northern R. R. Co. v. *North Dakota*, 236 U. S. 535. Mr. Justice Hughes, speaking for the Court, said:

> "The legislature undoubtedly has a wide range of discretion in the exercise of the power to prescribe reasonable charges, and it is not bound to fix uniform rates for all commodities, or to secure the same percentage of profit on every sort of business. There are many factors to be considered—differences in the articles transported,

> the care required, the risk assumed, *the value of the service,* and it is obviously important that there should be reasonable adjustments and classifications."

Darnell v. *Edward,* 244 *U. S.* 564. Mr. Justice Pitney, delivering the opinion of the Court, said:

> "The nature and value of the service rendered by the company to the public are matters to be considered."

The rate allowed by the Board meets fully the value of the service. The value of the service, of course, does not include in this case a return upon obsolete, inadequate and oversized equipment in the steam plant. It does not include the unnecessary operating loss of thirty thousand dollars a year nor an unnecessary maintenance loss of over seventeen thousand dollars a year. The better test in this case is a return upon the fair value of the property exclusive of the steam plant and a sufficient amount in the return to permit a profit on the current purchased from the Millville Manufacturing Company as well as an annual amount for amortization of the cost of the steam plant. All of these items the Board considered and the rate was made accordingly, which, it is submitted, was the exercise of good business judgment and also a legal exercise of the discretion vested in the Board.

STEAM PLANT.

V.

The treatment of the steam plant by the respondent in this case was a just and reasonable consideration of the reasonable use of the plant in serving the public.

The valuation of the steam plant for fixing a rate in this case falls within prohibition of the case of *The Long Branch Commission* v. *Tintern Manor Water Co.,* 70 *N. J. Eq., p.* 71, *at page* 80, that the consumer should

not be required to pay rates on such an unwise investment as is represented in the steam plant. The reasons for this treatment of the steam plant has been fully recited in this brief and the legal warrant for the Board treating the value of the plant and its necessity for public use is supported by the Tintern Manor Water Company case.

Mistakes in the business judgment of the management in charge of the enterprise must be met by the parties making the investment and not by the consumers of its service. While the interests of the ownership of the property are to be considered, they are not entitled to a greater return than it can normally earn under proper management.

Covington & Lexington Turnpike Co. v. *Sandford,* 164 *U. S.* 578:

> "It is clear that in ascertaining the present value we are not limited to the consideration of the amount of the actual investment. If that has been reckless or improvident, losses may be sustained which the community does not underwrite."
>
> *Simpson* v. *Shepard,* 230 *U. S.* 352.

In the above case it was also held, at page 596:

> "It cannot be said that a corporation operating a public highway is entitled, as of right, and without reference to the interests of the public, to realize a given per cent. upon its capital stock. When the question arises whether the legislature has exceeded its constitutional power in prescribing rates to be charged by a corporation controlling a public highway, stockholders are not the only persons whose rights or interests are to be considered. The rights of the public are not to be ignored. It is alleged here that the rates prescribed are unreasonable and unjust to the company and its stockholders. But that involves an inquiry as to what is reasonable and just for the public."

In *San Diego Land, etc.*, v. *Jasper*, 189 *U. S.* 439, it was held that patrons of a utility ought not to be compelled to pay rates upon excessive investments upon unnecessary facilities.

In *Knoxville* v. *Knoxville Water Co.*, 212 *U. S.* 1, it was held that errors in management cannot enhance the value upon which a rate is based.

While the decisions of Public Service Commissions are without controlling effect upon the Court in a case of this kind, it may be of interest to the Court to know what treatment the commissions have accorded disputes of the character that are now before the Court in the instant case.

> "Losses due to inefficient operation of coal gas equipment were deducted from operating expenses in determining the rates to the public."
>
> *Petersburg Gas Co., Petersburg, Va., P. U. R.* 1923B, 259.
>
> "A reduction should be made in estimates of operating expenses to compensate for the operation of a pumping station when the substitution of an electrically operated pumping station would result in a considerable saving in operating expenses."
>
> *Commission, ex rel, Newport News* v. *Newport News Light & Water Co., P. U. R.* 1923D, 91.
>
> "In fixing rates for a water utility, excessive coal consumption due to inefficient operation should not be recognized."
>
> *Re Albany Water Works, Indiana, P. U. R.* 1919C, 984.
>
> "A gas company should not be granted a full return based upon estimated operating expenses which are in turn based upon an unusual and unnecessary use of oil and a reduced use of natural gas."
>
> *Los Angeles Gas & Electric Corp., Calif., P. U. R.* 1919D, 140.

"The public should not be required to pay rates calculated to produce a fair return upon antiquated equipment furnishing inadequate service by ancient methods discarded by the intelligent progress of the art."

Re Michigan State Telephone Co., Michigan, P. U. R. 1921C, 545.

"If poor judgment has been exercised in the management of the company the public should not suffer thereby."

Albion v. *Western New York Utilities Co., P. U. R.* 1922E, 1925.

Reply to "Memorandum of Authorities" in Prosecutor's Brief.

In the memorandum of authorities furnished by the prosecutor the point is made that the respondent cannot substitute its judgment for the directors of a corporation. The respondent is not attempting to substitute its judgment for that of the corporation. What it has done is not to underwrite or place a premium upon improper conduct in the construction of the steam plant and not to approve at this time the construction of the steam plant that the Board refused to approve when application was made for that purpose, that is, to approve the financing for the construction of the steam plant.

The commission cases and other authorities cited by the prosecutor do not support the contention of the prosecutor in its brief.

The case of *Lizbon Light & Power Co.,* P. U. R. 1923, E., page 400, appears simply as an annotation and *in that particular case* the situation was not parallel to the instant case. And even in the Lizbon case it was held that:

"In flagrant cases of unwisdom the Commission would have the right to interfere in the supervision of the plant."

The defendant is not asking the Court to go that far. The Commission is not attempting to supervise the plant of the prosecutor. What it is attempting to do is *to fix just and reasonable rates* and under all the circumstances in this case it considers its duty legally done in this respect.

Another Commission case cited by the prosecutor is *Detroit Edison Co.*, P. U. R. 1923, E., page 845.

In the operation of its plant the Company concluded that it was not necessary to furnish "off-peak" service and the commission rightfully said that this was a matter of business management and it was not right for the commission to interfere, and the commission also said:

> "the fact that the Detroit Edison Co. has built up its business so that to-day it has the most desirable operating conditions in the Country."

was another reason for not interfering. This case is not parallel with the case at bar.

In the Commission's decision in the case of *Columbus Gas Light Co.*, P. U. R. 1923, E., page 602, cited by the prosecutor, the Commission rightfully held that it would not interfere with the business management of the company for it found, at page 606:

> "so far as operating expenses are concerned there is no tangible suggestion in the record of an abuse of discretion on the part of appellant's officers."

The Commission's decision of *Meade Coal Co.*, P. U. R. 1923, E., page 221, cited by the prosecutor, the defendant in that case insisted upon the Commission substituting its judgment in the operation of the plant for that of the company; particularly in regard to the maintenance charges. The Commission held that:

> "the maintenance charges for the past two or three years were normal and that it would require a few more years of experience to ascertain what may be termed a 'normal annual maintenance expense.'"

Of course, under these circumstances the Commission was correct in not interfering as insisted upon by the defendant.

In the case of *Northern States Power Co.*, P. U. R. 1924, A., page 325, cited by the prosecutor, the dispute arose over the "management charges" and the testimony showed that the charges for this item were reasonable and similar to like charges made for the same service in other companies. The Commission held that it would not substitute its judgment for the management of the company in that case. This decision does not afford any support to the contention of the prosecutor.

The case of *United Fuel & Gas Co.*, P. U. R. 1924, A., page 357, cited by the prosecutor, was a case in which an attempt was made to have the Commission require the Fuel & Gas Co. to separate the gasoline business from the gas business. The Commission in that case held, at page 369:

> "The matter of separating the gasoline business from the gas business is one that appeals direct to the discretion of the managing officers of applicant. These officials are the ones to decide what is a proper consideration for the gasoline rights. It is not the function of this Commission to substitute its judgment for the judgment of such officials."

In the case of *Pacific Tel. & Tel. Co.*, P. U. R. 1922, C., page 248, cited by the prosecutor, the dispute was that of the installation of automatic service and the Commission refused under the testimony in the case to interfere with the operation of the company as it was a development that did not require the supervision of the Commission and, of course, the Commission would not substitute its judgment or interfere with the operation of the Company and the Commission said on this point, at page 267:

> "It may be well at this point to recall that, during the hearing prior to Order 499, there was much criticism of the company for its alleged

> intention to discourage users of automatic service and ultimately to drive automatic equipment out of the field. Its denials were received with open incredulity. At the recent hearing the wind had shifted and the company was freely charged with arbitrary conduct in forcing automatic service on an unwilling public."

In the case of *Latrobe Water Co.,* P. U. R. 1922, C., page 811, cited by the prosecutor, an attempt was made to have the Commission exercise equitable jurisdiction in setting aside a contract made between the utility and the municipality and the Commission held that it did not have that power.

This decision has no application whatsoever. The courts of our State in the case of *Public Service Electric Co.* v. *Board and City of Plainfield,* 87 N. J. Law, page 128, aff. 88 N. J. Law, page 603, have long ago decided that the Board of Public Utility Commissioners were not vested with equitable powers.

All of the above cases cited by the prosecutor support the contention of the respondent rather than that of the prosecutor.

The only court decision quoted by the prosecutor is the case of the *City of Elizabeth* v. *Board,* 123 Atl., page 358. In the Elizabeth case there was no testimony before the Board that the Utility constructed its plant or any part thereof without the approval of the Commission nor that it constructed its plant unwisely and without design or that the plant was an improvident and unwise investment. The facts were directly to the contrary. The Elizabeth case is not controlling on this point, but rather the case of *Long Branch Commission* v. *Tintern Manor Water Co.,* 70 N. J. Eq., page 71. To sustain the prosecutor in this case would in its effect require the public to underwrite and guarantee a return upon a plant that was concededly mismanaged and wholly unnecessary, particularly so when energy could be purchased at a far less price from other sources.

It is respectfully submitted for the reason and upon the authorities cited herein, that the judgment of the Supreme Court be affirmed.

THOMAS BROWN,
Attorney for and of Counsel with the Respondent.

SPECIFIC REPLY TO STATEMENTS IN PROSECUTOR'S BRIEF.

The first reason assigned for reversal, namely, the reasonableness of the rates (p. 2 brief of prosecutor) the following colloquy which occurred between Commissioner Osborne and witness Franklin (who is the general manager of the prosecuting Company) does not support, but *decidedly refutes* the claim of the prosecutor as given on page 2 of the brief:

> "Q. Why can't you sell your goods; what is the matter with you? Why don't you sell more current to more people? A. We are trying to all the time.
>
> Q. Is there anything wrong with your salesmanship? A. Possibly might, I don't know.
>
> Q. Maybe that is the trouble. Maybe you are not delivering the goods the people want and the way they want it. A. The only trouble I can see is the price.
>
> Q. Too high? A. I acknowledge it is too high; I know it is too high.
>
> Q. Higher than other companies similarly situated sell for? A. I don't know than other companies similarly situated, but higher than other companies around New Jersey."

As to the second part of the same point the alleged necessity of the higher rates in order to produce adequate return on a "fair value" of the property, this is inseparably associated with the question of the value of the so-called steam plant which is shown in the second point offered by the prosecutor. The third point also

relates to the alleged value of "cost of construction" of the steam plant, and refers to its operating costs.

Point number four (p. 2, prosecutor's brief) as stated, is not founded entirely upon fact. It is true the $2,400 for steam plant attention was not allowed by respondent and this was in line with its action on the steam plant above referred to, in which action the evidence in the case overwhelmingly supports the respondent, as will later be shown herein. As to the $7,458 for street lamp expenses and $6,484 for law expense, the evidence showed conclusively that these should not be allowed in the full amount, but they were not, in fact, entirely excluded as stated by the prosecutor in this point. Most liberal allowances for both of these items were allowed by the respondent as is shown hereinafter.

A very large portion of the prosecutor's brief is devoted to an apology for the extremely poor condition of practically the entire equipment in, and associated with, the steam plant, much of which is not denied.

Brief Description of the Property.

Clear and adequate descriptions of the property are found in the testimony. Witness Temple (p. 178, l. 7, *et seq.*), presented *Exhibit "P-14"* (book of Exhibits, p. 28b), showing a plan of the sources of power supply to approximate scale. There are three sources of power as follows:

1—Hydro-electric plant; 2—Power plant of Millville Manufacturing Company (located 850 feet from the hydro-electric plant, more or less); and, 3—Steam plant (located about 13,000 feet from the hydro-electric plant, more or less).

The hydro-electric plant was the original and only source of supply prior to 1915 when purchase of power from the Millville Manufacturing Company was begun These two sources supplied the needs of the prosecutor (the lighting company), until February, of the year 1920 (Franklin, p. 290, l. 1, *et. seq.*), when the steam plant operation was begun.

The points cited on page 7 of the brief by the prosecutor from the findings of the respondent (The Commission), relative to the steam plant are: 1—That it should never have been installed; 2—That its operating cost was in excess of the cost of purchased current from outside sources; 3—That current requirements beyond those supplied by the hydro-electric plant be obtained at the lower costs from outside sources.

On page 3 of prosecutor's brief reference is made to certain losses due to high operating costs, which led to the adoption of the high rates complained about. It is there stated that these losses occurred during the year of 1920, and it should be noted that the steam plant began to operate in February of that year.

The higher rates were put into effect as of March 1, 1921, and ran as high as 19 cents per kilowatt-hour gross, with a reduction of three cents if bill were paid within a stated time. All the rate schedules were unreasonably high as will be seen by reference to the complete schedules on pages 12 and 13 of the testimony.

As to the effect of the steam plant operation on the cost of operation, the prosecutor's own *Exhibit R-11*, introduced by the witness Martz (pp. 449-450), states (book of Exhibits, p. 277, l. 37, *et seq.*):

> "In 1920 the present steam-driven generating plant was placed in operation. In that year gross operating revenue increased $50,143.34 over 1919 but at the same time operating expenses increased $98,085.83, resulting in a deficit balance of depreciation and fixed charges of $64,-460.36. A part of this deficit was brought about because the charges to the Gas Company for steam were lower than the actual cost of making same."

The testimony, referred to later on herein, shows in brief detail how these losses occurred and that they were with few exceptions, due to the gross inefficiency and delapidated condition of the equipment in the new steam plant, practically all of which was bought second hand.

Comments on the statements in prosecutor's brief, and the reply of respondent, will be presented in the order the statements appear.

Under the heading, "Facts with Relation to the Steam Plant," the brief states at the bottom of page 7, the building of this plant was begun in July, 1916. Also that its operation was begun February 1, 1920. Continuing on page 8, it also states that the boilers and engines and part of the machinery were purchased in January, 1917, and the balance in 1920. Reference to the testimony (p. 290), discloses that the boilers and the main engine were actually purchased in 1916, and only the engine-driven exciter was purchased in 1917. This is important for the reason that it adds one more year to the delay on prosecutor's part in driving ahead the construction of this plant. The items of equipment mentioned are really the essentials of the entire plant. The remaining items are relatively trivial in size and cost and in time required to procure and install.

The top paragraph on page 8 presents the allegation that the prosecutor was obliged to build the steam plant to meet its needs for the supply of power. It is stated that there was no certainty of getting current from the Millville Manufacturing Company; also that there was insufficient room to install the steam plant at the hydro plant site. These allegations are not in accordance with the record of the case nor with the facts. Witness Franklin testified as follows (p. 352, l. 25), in reference to the prosecutor's efforts to arrange for purchasing power from the manufacturing company:

> "Q. Did you make any inquiry in 1915 as to what price they would supply you with any definite amount of current? A. I could not answer that question very satisfactorily because there was no correspondence of any kind between us on the subject. Whatever there was was just verbal."

Also the testimony of the same witness on this subject as it appears later in the record (p. 353, l. 17):

"Q. Of course the Millville Company was already there, the Millville Manufacturing Company. I was referring to them now in that question. A. The Millville Manufacturing Company, you can consider that the same as any other outside company as far as we are concerned.

Q. Then you have never obtained a definite price from any of those three sources? A. No, sir.

Q. (By Commissioner Osborne.) Never made an effort to, have you? A. No, sir.

Q. Never desired to get current from those sources? A. We never thought we wanted current from those people.

Q. Never ascertained whether you could buy it cheaper than you could make it? A. I did not see any reason why we could not make it just as cheap as they could."

As to the allegation that the manufacturing company wanted the prosecutor to "get off their machines," the following is pertinent (p. 355, l. 16):

"Q. (By Commissioner Osborne.) What Company is that, the manufacturing Company? A. Yes.

Q. If your relations are so strained with the manufacturing company, how is it you can get them to accommodate you with this break-down current and put in transformers for you, on the theory that you may or may not use them? A. Mr. Lewis done it without any request from us."

See also Carver's testimony (p. 159), wherein he testified:

"Q. At that point; is that power obtainable by this company? A. That power is obtainable by this company according to information which we received from the Millville Manufacturing

> Company and also the same conclusions can be drawn from the practice of the company; if they wish to use the power of the Millville Manufacturing Company they throw a switch in and use it, so they practically have a break-down service, an emergency service from the Millville Manufacturing Company at the present time at this 3 cent rate."

In reference to the proper location of a steam plant, if such a plant had been needed, the testimony shows that there was plenty of space in the hydro-electric plant under proper conditions, and if the large amount of unused and unnecessary equipment in this plant had been removed (*Exhibit P-31;* Exhibit book, p. 88, l. 36, *et seq.*

The further facts are that from the year 1915 to date, the only reliable source of power the prosecutor has had has been that from the manufacturing company. The entire four years which elapsed after the engines, boilers, and other equipment were purchased for the steam plant, until it began to operate shows that heavy power purchases were made, which proves that the manufacturing company was able to fully meet the needs of the prosecutor. The amounts of power purchased, by years, and the rates for the same are shown in *Exhibit P-31* (Exhibit book, p. 93, l. 31, *et seq.*). In one year this amount exceeded 1,000,000 kilowatt-hours. The rates for this power ranged from 1.71 cents per kilowatt-hour to 2.02 cents up to 1920, when the steam plant started. After this time the range was from 2.55 cents to 3.06 cents per kilowatt-hour, the higher figures being for "break-down" or emergency service.

The fact that the prosecutor was satisfied to permit four years to elapse during the time the equipment bought in 1916 and 1917, as already shown, was being made ready to operate, well supports the testimony cited that there was no real difficulty in getting all the power the prosecutor required by purchase, and at rates that the record shows, were most reasonable.

In the bottom paragraph of page 8 of the prosecutor's brief, it is alleged that second-hand equipment was bought because deliveries were poor on new equipment, but the testimony does not support this contention because the same witness referred to later in the record (Franklin, p. 350, l. 11), clearly states that he cannot say just in what year such deliveries would apply. Witness Loeb states (p. 413, l. 25, *et seq.*), that in 1919 and 1920 the time of delivery was as high as two years "in certain instances." This has no bearing on the case because it is admitted in the testimony, and mentioned in the prosecutor's brief (bottom p. 7), that the construction was under way in 1916. The statement by witness Temple (*Exhibit P-31;* Exhibit book, p. 77, l. 7, *et seq.*), is clear on this point. It is as follows:

> "Certainly no one will dispute that deliveries on turbo-generators and other power plant and construction equipment were substantially from four to six months, to any purchaser whose credit was acceptable, in 1915 or 1916. Even in 1917, and later, deliveries were not longer than eight months as a rule."

The allegation is that the boilers and engine were in good condition even though they were being disposed of by a previous user. Witness Franklin states (p. 292, l. 32), that the boilers came out of the City Hall, Philadelphia. An investigation of the matter disclosed the fact that the boilers were sold by the Electrical Bureau of the City of Philadelphia in 1916 as "old material" and this is proved by a certified transcription of the bills of sale covering the transaction which appear on page 100, line 33 (book of Exhibits). It is shown that the boilers were sold for the sum of $207 each.

In the same paragraph it is alleged that the engine was purchased "after a thorough investigation." The testimony cited in prosecutor's brief discloses the fact that this so-called investigation consisted in asking an employee of a publishing company in Philadelphia how the engines in his charge performed. In so far as any

"thorough investigation" of this particular engine was concerned the witness Franklin states (p. 293, l. 12):

> "I went down and looked at the engine where it was located, everything seemed to be in fairly good condition and we bought the engine."

The penalties of purchasing second-hand equipment of such major importance as this without actually determining its condition, are well shown by the prosecutor's experience in this case.

The excessive fuel costs to run these boilers and the engine, due to their inefficiency and the extremely high cost to repair the equipment which is constantly breaking down one place or another, have resulted in costs of power from this plant that ran as high as 10.995 cents per kilowatt-hour in one year (Exhibit book, p. 27, l. 32).

The average cost over a long period for the power sent out by this steam plant was shown to be 8.251 cents per kilowatt-hour (p. 86, l. 21); also *Exhibit P-18* (Exhibit book, p. 36).

In the matter of efficiency the following statement by witness Temple is important (p. 115, l. 23, *et. seq.*):

> "Q. (By Commissioner Osborne.) Why does it cost as much as 10 cents to produce this power at the steam plant? A. On account of the condition of the equipment; it is not economical, most decidedly uneconomical; getting to be very much antiquated, it is on old reciprocating engine and boilers."

And on same page, line 36:

> "Q. (By Commissioner Osborne.) Can you tell us briefly why the steam plant is so uneconomical and what kind of a plant should be operated, if you can? A. The steam plant, the reason for the lack of economy in the steam plant is, as far as I can tell you, as I said before, the condition of the equipment. The engine which is there, according to the company's own

statement, must be taking from 40 to 50 pounds of steam per kilowatt-hour. A turbine would take considerably less than half the maximum of that, and if it was a well-arranged turbine it would take less than half, not more than 18 to 20 pounds.

Q. You mean the machinery is obsolete? A. Yes, sir.

Q. Was it new machinery when the plant was built, or old? A. No, sir, very old."

The prosecutor's own testimony bears out the foregoing. The witness Loeb states as follows (p. 262, l. 31, *et seq.*):

"Q. What was the average water rate for the entire month of November? A. For the entire month of November after the meter had been properly adjusted the average water rate was 35.6 pounds per kilowatt-hour."

As disclosed on the same page (p. 262, l. 16), this high rate of 35.6 pounds per kilowatt-hour was during the time an engine expert was on the ground making tests and adjustments.

In the matter of maintenance costs the testimony shows an expenditure for repairs of breakdowns and other difficulties which reaches a total of $17,666.79 in one year (p. 85, l. 15); (also Exhibit book, p. 27, see under Account No. 412).

Serious breakdowns of the engine have occurred with great frequency. Testimony of witness Franklin on this matter is of interest (p. 293, l. 27); (this testimony was given on January 23, 1923):

"Q. Since the steam plant has been in operation have you had any breakdowns? A. Yes, sir.

Q. How many? A. Well, we have had one genuine breakdown. The second time was an echo of the original breakdown.

Q. When was the original breakdown? A. I cannot tell you the exact date, but it was along in January or February a year ago."

And again on page 294, line 16, the same witness was giving testimony:

"Q. How long was the engine out of commission at that time? A. A couple of months. I do not remember exactly. Around two months, such a matter.

Q. I understand in December of last year the engine was out of commission; what was the cause of that? A. Yes. The disc on the low pressure side developed a crack, but there was no question in my mind but what that crack was occasioned when the engine broke the first time, because on examining the disc when it came apart, you would see some bright places where it had just broken and other places where they were dark, black, which showed they had been cracked there quite some time.

Q. Is the engine in condition now? A. No. It will probably be a month before the engine is in use again. We are not only repairing that broken disc, but Mr. Dunbar, the expert engineer for the Providence Engineering Corporation, we had him come out there and go over the engine and he told us that the high pressure and the low pressure valve were both leaking steam and that the valve seats should be bored out and new valves put in those points. He said they were leaking enough steam to develop about 90 kilowatts of current. So we are doing that overhauling now at the same time we are fixing the disc."

Again at the hearing on May 8, 1923, a third serious breakdown is testified to by witness Franklin (p. 481, l. 31), who describes it and gives his theories as to its cause. After this is finished the following is found in the record (p. 482, l. 17):

"Q. (By Commissioner Osborne.) It had not been running very long then? A. We had been running it with a load about an hour. We had

run it three days, we had run the engine altogether three days, getting it settled down and tested out, but we had run it with a light load, only about 160 kilowatts for an hour when it happened."

The serious character of these wrecks of the engine is shown in photographs in *Exhibits P-28 and P-29*, introduced into the record (p. 241, l. 31, *et seq.*). These photographs are bound in the Exhibit book following pages 16a and 16b. The third, fourth and sixth sheet of photographs show the breakdowns of December, 1922, and March, 1923.

It is important to note the financial losses which have been incurred due to the persistence of the prosecutor in trying to get this plant to operate, notwithstanding its extremely inefficient and delapidated condition. *Exhibit P-15* (Exhibit book, p. 31), shows the net cost of the steam plant operation for each year since it began to operate and it also shows what the same amount of purchased power would have cost, based on the average price for the said purchased power during the particular year. The total loss for the period involved is found to be $70,983.15, or an average of $30,421.35 per year. This is the penalty the prosecutor pays for the inefficiency of the steam plant.

Exhibit P-20 (Exhibit book, p. 39), shows the total of the expenditures for fixing up the equipment in the steam plant for the same period as is represented above. It totals $23,834.74. This is the penalty paid for the delapidated condition of this second-hand equipment, of which the steam plant is composed.

Beside the total unfitness of the boilers and the engine in this plant, the accessory power equipment is equally unsatisfactory because of its excessive size for the duty it is required to perform, and because of its inefficiency. A modern plant of the same capacity as this steam plant, namely 500 kilowatts, would require 7½ kilowatts, at the most for excitation (p. 182, l. 1, *et seq.*), while this plant has an exciter of 35 kilowatts

capacity and one of 50 kilowatts capacity (p. 183, l. 13).

On page 15 of the prosecutor's brief, reference is made to the statement of Mr. Temple, engineer for the municipality, that the condenser pump is too large, and the alleged statement is refuted by prosecutor's witness. The statement by Mr. Temple, which is questioned, appears in the testimony (p. 180, l. 31), as follows:

> "In the case of the pump, the condenser pump, there is a 40-horse power motor on there, and it is evident at once to an engineer that it is too large. It is probably not too large for the equipment in this plant."

After interruption the witness continued his statement as it appears on page 181, line 21, *et seq.*

> "But that last statement does not mean that it is not too large for equipment of this capacity of anywhere modern character or good operating condition, because it certainly is. When you have a large steam consumption by a prime mover, an engine, a main engine, which is the case with the engine which forms a part of the set indicated at K in the upper right-hand corner of *Exhibit P-12,* you not only—
>
> Q. (By Commissioner Osborne.) *P-12?*
> A. I have not marked that. *P-14.* That engine requiring a tremendous amount of steam costs a lot more to operate in its own self intrinsically, and not only that, to get the steam out of there, to pump it away as it were, to maintain the vacuum, there again it exacts another penalty. So much for the condenser."

There is evidently no dispute as to the size of the condenser motor for the existing engine with its great inefficiency and high steam consumption. The prosecutor will not deny that it is far too large for a proper kind of main steam unit. In fact, a witness for the prosecutor, Mr. Martz, introduced *Exhibit R-11,* which well supports Mr. Temple's statement as to the exces-

sive size of the condenser unit. The following statement appears in *Exhibit R-11:*

> (book of Exhibits, p. 272, l. 27): "* * * we would recommend for installation at the existing steam plant a 1,000 K.W. turbo-generator utilizing steam at a pressure of about 200 pounds and with a slight amount of superheat. To generate this steam, the installation of one new 400 H.P. boiler would be required. The water rate of the new turbine would be so favorable compared to the present engine that it would be possible to use the existing jet-condenser at least, until such time as the load requirements exceeded the capacity of the new turbine."

From the foregoing it is seen that the prosecutor's own testimony proves that the condenser capacity is great enough for a modern generating unit of 1,000 kilowatts capacity, which is twice that of the antiquated engine in the plant at present. The above statement also shows that the prosecutor's witness, who is an engineer, does not place enough reliance on the old boilers now in the plant to depend upon them for the proposed new unit.

It should be stated at this point, that respondent is not able to agree with the import of the recommendation above cited for the testimony as to amount of load on the plant. Again, reference is made to a statement of the prosecutor's own witness, Mr. Loeb, which is quoted from the record in the brief at the bottom of page 18 and top of page 19, as follows: "So I cannot conceive of a modern machine earning its fixed charges with the present load at Millville." This supports respondent's position that the steam plant was not, and is not, warranted, for an antiquated and inefficient machine would have still less chance than a modern machine, to earn its fixed charges, or, for that matter, to earn even its operating charges.

The net result of these oversized and inefficient items of accessory power equipment is shown by the following statement of witness Temple (p. 188, l. 38):

"That the accessory power equipment in this plant is taking an absurdly large amount of power.

Q. (By Senator Brown.) In percentage, how much more do you think it is taking than it should? A. Around three times as much, two to three times as much, certainly over two times. Understand, I am talking about a plant that would be a respectable plant, that is, I am not talking about equipment as old as this equipment is nor in the condition in which this equipment is.

Q. (By Commissioner Osborne.) You mean a reasonably efficient plant might use not more than one-half at the outside, the amount of electricity, of its output, for its internal purposes? A. Yes, sir. It would not use anything like one-half, your Honor."

Another source of added expense, and therefore loss, to the prosecutor as a result of this steam plant being built is in the item of operating labor. This matter is set forth in the record in a statement by witness Temple (p. 191, l. 10, *et seq.*):

"* * * It is necessary, due to the distant points at which these plants are located from each other for a dual operating force to be maintained. * * *"

Later on in the statement it is brought out that this added expense will range from $5,000 to $6,000 per year, at least.

The statement further sets forth (same page, l. 34):

"* * * If a plant had to be built, a situation which would permit of the combination of labor forces would be one of the most urgent necessities in designing and laying out and locating the plant, because otherwise there would be forever, at least as long as the plant stands, a duplication of labor force. * * *"

Another item of loss to the prosecutor is in the sale of steam to the gas company, whose plant is located near

the steam plant, as shown on *Exhibit P-14* already referred to herein. The gas company management is interlocked, most intimately, with that of the electric company who is the prosecutor in this case (*Exhibit P-21*, introduced into the record, p. 236, l. 18, *et seq.*, and to be found in book of Exhibits, p. 41). The character of this transaction for one year is indicated by a statement in prosecutor's own *Exhibit R-11* (see p. 260 of book of Exhibits, l. 7, *et seq.*). The testimony found there is as follows: "The total revenue collected from the "gas company in 1920 was $21,962 or approximately "$10,000 less than the actual cost of the coal alone. If "an appropriate portion of boiler room labor and repairs, "depreciation, taxes, and fixed charges are added, the "total loss on this business was approximately $19,000."

There is still another item of expense which came into existence with the steam plant, and it has grown to a relatively large amount. This is the item of interest payable on the obligations of the prosecutor for the cost of building the steam plant. The amounts involved are shown in *Exhibit P-22* (book of Exhibits, p. 43). In the years 1915 and 1916, before the steam plant construction was far enough along to be felt as a financial burden, the interest was around $800 to $900 per year. Its amount began to grow in 1917, and the increase has been steady for each year since 1917, until, in 1921, the amount of interest is shown to be *$16,740.74*. In 1922, for nine months only, the interest is still greater proportionately. It is $14,461.70 for the three-quarters of a year.

The total expenditure for the years shown in the Exhibit is $78,743.37. It should be remembered that the obligation for which this interest is charged, for the most part, is in favor of the High Pressure Construction Company, which company is most intimately interlocked with the electric company, who is the prosecutor in this issue, as shown in *Exhibit P-21*, already referred to herein. From the record in the case (witness Franklin, p. 297, l. 35), it appears the steam plant was built by this high

pressure company, although the said company was originally formed merely for the purpose of "digging ditches for gas mains" (same page as above, l. 4). It may be further noted, that notwithstanding the most unfortunate character of the equipment in the steam plant, and the hopeless features of its design, this high pressure company did not hesitate to charge the electric company, who is the prosecutor in this issue, percentages for its services that ran as high as 33⅓ per cent., plus 7 per cent. This charge was in force for this construction work in spite of the fact that not even preliminary calculations as to costs involved in the venture of building the steam plant were made (see testimony of witness Franklin, p. 352, l. 4, *et seq.*).

There are a few minor points contained in the brief of the prosecutor which have not yet been touched upon. While it would not appear that they would carry much weight in this issue, they will be taken up briefly.

On page 10 reference is made to the absence of synchronizing at the hydro-electric plant which witness Loeb alleges he discovered. The fact is that Mr. Temple mentioned the need of this and fully described the advantages (p. 90, l. 19, *et seq.*), many weeks prior to the time Mr. Loeb's testimony was given.

On the same page, next paragraph, reference is made to the testimony of witness Loeb that the equipment in the steam plant is "not obsolete," and that the same kind is used in a great many plants to-day. In view of the fact that the manufacturers of certain of his equipment, whose age runs as high as twenty years or more, are still in the same line of business, it must be admitted that the same make of equipment is found in modern plants, particularly the Babcock & Wilcox make of boiler, but this proves nothing. Reference to his statement as to the Rice & Sargent engine discloses the fact that he merely said it is "largely used."

It is interesting to note that the same witness (p. 261, l. 32), a short time later, referred to the steam-driven generators in twelve plants with which he is himself con-

cerned. He mentioned 33 such units and every one of them is a turbine-driven unit. This scarcely supports his contention that the old engine type of twenty years ago, is still "largely used."

At the bottom of page 10 of the brief, alleged costs are given for power from the steam plant. These are decidedly theoretical for the actual records of the prosecutor show far greater figures. Witness Loeb seems to have overlooked the fact that during the latter part of the year he was estimating the cost for, the plant was suffering from its third or fourth serious breakdown. Testimony already cited herein, relative to these breakdowns, shows that the repairs from this break required until some time in March, after which the engine ran about an hour and was wrecked again. The actual costs for all these breakdowns must be taken into consideration in theory as well as in practice.

Many suggestions for improvement in the economy of the engine are offered. One on page 10, another on page 11, also rebuilding the engine valves (bottom of page 11 and top of page 12), another at top of page 14, and still another on page 19 where reference is made to prosecutor's *Exhibit R-8*. The improvement to be realized from these so-called economies is not to be compared with those which would be realized if a modern plant were installed. Moreover, these improvements are not based on the actual records of the prosecutor but upon theoretical and hypothetical conditions. The statements quoted from Mr. Loeb's testimony show that it is all estimated. And certainly the successful outcome of any improvements in the steam plant must be based on the assumption that the old engine will run without being wrecked for at least reasonable periods. Thus far the running periods range from an hour to a few months, which means that any economies, if they were available, would be eaten up many times over in the repair bills.

The foregoing comments must necessarily apply also to the testimony quoted on pages 20 and 21 of the brief.

On page 14 of the prosecutor's brief, reference is made to the cause of one of the serious breakdowns of the engine in the steam plant. It is set forth that Mr. Loeb "positively stated" that it "was not the fact" that the breakdown occurred because the engine was old and worn out. Reference to the record discloses the character of the witness' testimony on this point. His answer to a question by Senator Brown is as follows (p. 275, l. 35): "A. We are talking about 1921 when the accident was the result of water in the cylinders, so I was told."

Reference to the photographs of these several wrecks of the engine will clearly demonstrate the utter impossibility of any successful attempt to analyze the accidents and determine what part broke down first.

The "probable cost of a modern turbine plant of 600 kilowatts" as determined by Mr. Loeb, is referred to on page 18 of the brief, and the figure, as given, is $149,000. The brief states this is based on the purchase being made in 1919 or 1920, but reference to the record as given (p. 413, l. 32), discloses the fact that the witness used prices which would apply during the year 1922.

If this estimated figure was intended to show a comparison between the existing steam plant price and the price of a modern plant the capacity of the plant should have been 500 kilowatts instead of 600 kilowatts. Also 1916 prices should have been used. Moreover, on page 19 of the brief, near the top, it is stated this "$149,000 covers the power plant alone; not the generators." Again the brief is in error as reference to the place given in the record will show, namely (p. 415, l. 4). The witness clearly states that the generators are included.

According to the testimony of Mr. Temple (p. 117, l. 36, *et seq.*), the cost of a modern turbine plant would have been around $50,000 to $75,000. Mr. Loeb has given no detailed estimate to show how he arrived at his figure of $149,000. The figures given above by Mr. Temple are shown in the form of a detailed estimate in

Exhibit P-31 (Exhibit book, p. 91). These details are stated to be based upon "actual quotations from the manufacturers." Two estimates are presented, one of which is based on prices obtaining January 1, 1923, and the other on prices as of 1916-1917.

The January 1, 1923, figures show a total cost of $65,134, and the prices of the earlier years total $42,025. Both of these totals are exclusive of overhead costs, a fair amount for which, added to the above figures would show "round number" totals of $75,000 and $50,000, respectively.

It would appear that Mr. Loeb's estimate, above referred to, must provide for a large amount of additional equipment in some way. This allegation by respondent is supported by the estimated cost of the 1,000-kilowatt turbine installation as given in prosecutor's own *Exhibit R-11* (Exhibit book, p. 274, top of page). The total cost of the items necessary for the installation of the 1,000-kilowatt turbine is there estimated to be $79,140 including "overheads and contingencies." The cost of the building would be slightly higher if a separate structure were erected, and there would be also an added cost for the cooling pond and condenser if a separate plant were being estimated on. These items would not exceed $15,000, or, in an extreme case, $20,000, which must be added to the $79,140 above given. The resulting cost of the complete 1,000-kilowatt plant would therefore be under the sum of $100,000. This is about two-thirds the estimate of Mr. Loeb, above referred to, for what he states to be a 600-kilowatt plant. This supports the contention of respondent that Loeb must have included considerable excess equipment.

Moreover, the $100,000 above given for a 1,000-kilowatt turbine supports the testimony of Mr. Temple as to $75,000 being the outside cost of a plant of 500-kilowatt capacity. There is no dispute as to the great superiority of the turbine plant over an engine type of plant. Furthermore, it is evident from the testimony that turbine equipment could have been available in a

relatively short time if ordered in 1916 or 1917. Even with the delivery period of two years claimed by the prosecutor for machines bought in 1919 or 1920 no delay of four years would have taken place.

In connection with the estimate of the cost of a modern plant, a summary of the losses due to the steam plant on three items only as brought out herein will be important. These items are:

Losses due to inefficiency, ...	$70,983
High cost of repairs due to breakdowns, ...	23,834
Expenditure for interest on steam plant obligations, ...	78,743
Total, ...	$173,560

The above total sum would have built two or three modern plants of the capacity of the antiquated steam plant.

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MILLVILLE ELECTRIC LIGHT COMPANY
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TABLE

I. Comparison of Appraisal by C. A. Brickman (of Day & Zimmerman) with book costs and book additions to May 31, 1922. Values new as of December 31, 1919.

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III. Tabulation of Bills of H. P. Construction Company to Millville Electric Company, November 1, 1915 to May 31, 1922.

IV. Tabulation showing percentage additions for profit and overhead to direct cost of construction by H. P. Construction Company on bills to Millville Electric Light Company.

V. Book costs and appraised values of Steam Plant.

VI. Adjustment of Book costs and Appraisals as given in Table 1 and Table VII to exclude value of Steam Plant.

VII. Comparison of two Day & Zimmerman Appraisals.

VIII. Saving in Operating Expenses for 1920, 1921 and four months of 1922 on basis of purchased Power and Corresponding Income.

(a) On basis of power purchased at 3 cents per Kw. hr.

(b) On basis of power purchased at 2.75 cents per Kw. hr.

(c) On basis of power purchased at 2.5 cents per Kw. hr.

MILLVILLE ELECTRIC LIGHT COMPANY

1922 RATE CASE

TABLE I

*COMPARISON OF APPRAISAL BY C. A. BRICKMAN (OF DAY & ZIMMERMAN) **

With Book Costs and with Book Additions to May 31, 1922.

VALUES NEW AS OF DECEMBER 31, 1919.

	Appraisal	Book Costs	Difference between appraisal and book costs—Appraisal over +, under —
Property acquired prior to December 31, 1915 with overheads,	$89,000	$95,000	— $6,000
Interest and Taxes on preceding,	7,000		+ 7,000
Second-hand equipment installed in new plant—			
Net cost,	38,200	Approx. 18,200	+ 20,000
Overhead on preceding,	7,640	2,730	+ 4,190
Contractor's Profit,		18,000	— 18,000
Other items of new plant (including organization expenses)	143,160	162,070	— 18,910
TOTALS—Value New	$285,000	$296,000	—$11,000

DEPRECIATION AS OF DECEMBER 31, 1919.

Property acquired prior to December 31, 1915,	$43,250	$69,500	—$26,250
On second-hand equipment purchased for new plant,	7,480		+ 7,480
Total Depreciation as of December 31, 1919,	$50,730	$69,500	+$18,770

PRESENT VALUE AS OF DECEMBER 31, 1919.

Property acquired prior to December 31, 1915,	$45,750	$25,500	+$20,250
New Plant	188,450	201,000	— 12,550
Total, December 31, 1919,	$234,200	$226,500	+ $7,700
Net additions, December 31, 1919 to May 31, 1922,	58,726	58,726	

Total, May 31, 1922 (No additional depreciation deducted 1920–1922),	$292,926	$285,226
Deduction to reduce profit of High Pressure Construction Co. to a maximum of ten per cent. on base cost,		25,524
		$259,702

(Reference Table III).

*Submitted as Exhibit P-10 in application for security issue 1920 and as Exhibit P-19 in application for increased rates in 1920.

MILLVILLE ELECTRIC LIGHT COMPANY

1922 RATE CASE

TABLE III

TABULATION OF BILLS OF H. P. CONSTRUCTION CO. TO MILLVILLE ELECTRIC LIGHT COMPANY

NOVEMBER 1, 1915 TO MAY 31, 1922.**

Ref. Page		Base Cost	Per. Ct. Profit Added*	Amount	Total Charge
1920—31	1915 Bill	$12,089.43	25	$3,022.35	$15,111.78
1920—31	1916 Bill	68,204.28	25	17,049.99	85,254.27
—32	1917 Bill	29,221.61	16 2-3	4,870.27	34,091.88
—33	1918 Bill	28,930.07	16 2-3	4,821.68	33,751.75
—34	1919 Bill 9 mo.	26,605.00	16 2-3	4,434.17	31,039.17
—35	1919 Bill 3 mo.	1,426.39	16 2-3	237.73	1,664.12
—33	Sub total	136,476.78	20.68	34,436.19	200,912.97
1920—26	Land, Services Meters, Meter Installations	9,490.54			***9,490.54
1920	Bal. 1st 6 mo.	2,520.00	25	629.47	***3,149.47
1920	Bal. 2nd 6 mo.	4,205.00	33 1-3	1,400.98	***5,605.98
1921	Land, Services Meter Instal., etc.	6,926.69			6,926.69
1921	Balance	22,937.69	33 1-3	7,645.95	30,583.73
1922	Services, meters, etc. 5 mos.	2,711.46			2,711.46
	Balance,	4,396.02		1,465.34	5,861.36
	Total 1915-1921 on which per. cts. are added	200,535.64	22.2	45,577.97	246,113.61
	Totals— No additions:	19,128.69			19,128.69
GRAND TOTALS,		$219,664.33		$45,577.93	$265,242.26
	Deduction to reduce Profit H. P. Construction Co. to Maximum of 10 per ct. on Base Cost,			25,524.00	25,524.00

*See Table IV.—may also include some miscellaneous expenses for some years.

**1922 bill not rendered on May 31st, 1922 but accrued bill to May 31, 1922 is included.

***Computed on basis of total gross addition for year, percentage additions indicated in Table III and assumption that no overhead was added to items indicated during year.

MILLVILLE ELECTRIC LIGHT COMPANY

1922 RATE CASE

TABLE IV

TABULATION SHOWING PERCENTAGE ADDITIONS FOR PROFIT AND OVERHEAD TO DIRECT COST OF CONSTRUCTION BY H. P. CONSTRUCTION COMPANY ON BILLS TO MILLVILLE ELECTRIC LIGHT CO.

(Ref. Letter S. J. Franklin 9-26-22.)

Bill for 1915 and 1916	*25 per cent.
Bill for 1917	*16 2-3 per cent. (originally 25 per cent., but reduced to 16 2-3 per cent.)
Bill for 1918	*16 2-3 per cent.
Bill for 1919	*16 2-3 per cent.
Bill of June 30, 1920.	25 per cent. 7 per cent. added on Material and Labor, for Freight, Cartage, Storage, Wastage, etc.
Bill of December 31, 1920.	33 1-3 per cent. nothing added on Material and Labor, for freight, cartage, storage, wastage, etc.
Bill of June 30, 1921	33 1-3 per cent. 7 per cent. added on Material only, for freight, cartage, storage, wastage, etc.
Bill of December 31, 1921	33 1-3 per cent. 7 per cent. added on Material only, for freight, cartage, storage, wastage, etc.
Bill of June 30, 1921	33 1-3 per cent. 7 per cent. added on Material only, for freight, cartage, storage, wastage, ect.

*No precentage added 1915 to 1919, inclusive, for Freight, Cartage, Storage, Wastage, etc.

Above precentages have been charged on all new construction starting in November, 1915 to date, excepting that charge on meters, meter installation and services was discontinued in 1920, and date taken as January 1, 1920 in Table III.

Whether freight, cartage, etc. was charged direct in years in which a separate percentage was not added for same, or whether the percentage added was intended to include same, has not been ascertained.

New Jersey State

MILLVILLE ELECTRIC LIGHT COMPANY—1922 RATE CASE TABLE V

BOOK COSTS AND APPRAISED VALUES OF STEAM PLANT

Acct. No.	Item	Book Costs charged to Fixed Capital: Prior to 1920	1920	1921	Total	Day & Zimmerman Appraisals: As of 1-1-1920 Report No. 1486 Cost New	As of 1-1-1920 Report No. 1486 Present Value	As of 1-1-1922 Report No. 1814 Cost New	As of 1-1-1922 Report No. 1814 Present Value
101	Land	$2,500	$2,500		$5,000	$2,500	$2,500	$5,000	$5,000
109	Power Plant Bldgs.		12,807		12,807	10,400	9,880	12,622	12,090
110	Furn. Boiler & Acc.		44,791	6,476	51,267	32,760	27,404	55,929	44,142
111	Steam Engines		24,291	670	24,961	30,425	22,043	38,649	30,392
115	Elec. Generators		5,793	2,340	8,133	12,720	8,234	17,394	12,710
116	Acc. Elec. Equipt. 50% total		10,122	533	10,675	4,042	3,782	4,927	4,435
117	Misc. Power Plt. Eguipt.		1,576		1,576	295	221	696	557
	Net Book Additions for 1920 & 1921					14,193*	14,193*		
	Sub-total	$2,500	$101,880	$10,039	$114,419	$107,335	$88,257	$135,217	$109,326
	Per cent. Additions or deduction				—8.85%***	+21.4%**	+25.9%**	+15.75%	+17.3%
	Amount of Addition or deduction				—9,684***	22,970	19,180	21,297	18,900
	Totals				$99,735	$130,305	$107,437	$156.514	$128,226
	Taken as				$100,000	$130,000	$107,000	$156,000	$128,000

*1920 and 1921 construction not included above:

101	Land	$2,500
109		41.88
110		7,275.68
111		669.84
115		2,340.10
116	50%	553.00
117		812.72
		14,193.22

**Applied to appraised values only.
***To reduce profit charged on books to approximately 10 %—total book cost less land is reduced 8.85%—computed from Table III.

MILLVILLE ELECTRIC LIGHT COMPANY—1922 RATE CASE

TABLE VI

ADJUSTMENTS OF BOOK COSTS AND APPRAISALS AS GIVEN IN TABLE I AND TABLE VII TO EXCLUDE VALUE OF STEAM PLANT SHOWN IN TABLE V—ALSO ADJUSTMENT OF JANUARY 1, 1920. APPRAISAL TO INCLUDE ITEM SHOWN BELOW

	Cost New	Present Value
Appraisal as of January 1, 1920 with book additions to May 31, 1922 (Table I)	$343,650	$292,926
Add cost of Buildings acquired from Millville Water Company 1916*	1,500	1,500
	$343,150	$294,426

Adjusted Totals	Book Costs** New	Book Costs** Present Value	1-1-20 Cost New	Appraisal Present Value	1-1-22 Cost New	Appraisal Present Value
Values as of December 31, 1921 (Table VII)					$400,040	$329,881
Additions—January 1 to May 31, 1922					7,241	7,241
Totals as of May 31, 1922 (See Table I and VII above)	$329,202	$259,702	$345,150	$294,426	$407,281	$337,122
Deduction for Steam Plant (See Table V)	100,000	100,000	130,000	107,000	156,000	128,000
Totals exclusive of Steam Plant as of May 31, 1922	$229,202	$159,702	$215,150	$187,426	$251,281	$209,122

*Not approved by Board of Public Utility Commissioners.

*Book costs adjusted to exclude a portion of contractor's profit charged—see Table I.

MILLVILLE ELECTRIC LIGHT COMPANY

1922 RATE CASE

TABLE VII

COMPARISON OF TWO DAY & ZIMMERMAN APPRAISALS

Ref.	Detailed Appraisal Summary	Cost to Reproduce 1-1-22 1840	Cost to Reproduce 1-1 20 7486	Present Value 1-1-22	Present Value 1-1 20
101	Land:				
	Steam Plate Site	$2,500	$2,500	$2,500	$2,500
	Hydro Plant and Water Plant Site	1,000	1,000	1,000	1,000
	Water Rights and R. of W. for Wasteway	20,000	24,000	20,000	24,000
	Plot adjoining Steam Plant Site	2,500		2,500	
	Total Land Devoted to Electric Operation	26,000	27,500	26,000	27,500
	Difference	1,500		1,500	
107	General Equipment	1,069	769	625	500
	Difference		300		125
108	Dams, Canals and Pipe Lines				
	Intake	1,190		892	
	Flume	3,920		2,740	
	Tailrace	2,244		1,680	
	Total Dams, Canals and Pipe Lines	7,354	4,748	5,312	2,962
	Difference		2,606		2,350
109	Power Plant Buildings				
	Hydro Electric and Water Plant	17,188		10,915	
	Steam Plant	12,622		12,090	
	Total Power Plant Building	29,810	17,300	23,005	14,815
	Difference		12,510		8,190
110	Furnaces, Boilers and Accessories	55,929	32,760	44,142	27,404
	Difference		23,169		16,738
111	Steam Engines	38,649	30,425	30,392	22,043
	Difference		8,224		8,349
112	Turbines and Water Wheels	3,346	3,350	1,673	1,675
	Difference	4		2	

114	Gas Engines		1,890		756
	Difference	1,890		756	
115	Electric Generators				
	Hydro-Electric Plant	9,625		6,720	
	Steam Plant	17,394		12,710	
	Total Electric Generators	27,017	16,895	19,430	10,994
	Difference		10,122		8,436
116	Accessory Electric Power Equipment				
	Hydro Electric Plant	20,195		17,167	
	Steam Plant	4,927		4,435	
	Total Accessory Electric Power Equipment	25,122	21,869	21,602	18,338
	Difference		3,253		3,264
117	Miscellaneous Power Plant Equipment				
	Hydro Electric Plant	4,267		2,987	
	Steam Plant	696		557	
	Total Miscellaneous Power Plant Equipment	4,963	3,450	3,544	2,326
	Difference		1,513		1,218
120	Poles and Fixtures				
	Poles	32,644		27,747	
	Guys	2,753		2,340	
	Cross Arms	12,094		10,280	
	Miscellaneous Brackets	807		686	
	Total Poles and Fixtures	48,298	21,949	41,053	14,833
	Difference		26,349		26,220
123	Distribution System				
	Wire	17,329		15,596	
	Insulators	6,162		5,546	
	Total Distribution System	23,491	17,929	21,142	16,356
	Difference		5,562		4,786
124	Line Transformers and Devices				
	Line Transformers	16,622		14,129	
	Line Devices	267		227	
	Total Line Transformers and Devices	16,889	8,028	14,356	6,796
	Difference		8,861		7,560
125	Electric Services	5,725	4,131	5,153	3,335
	Difference		1,594		1,818
126	Electric Meters				
	Electric Meters on lines	8,587		7,299	
	Electric Meters in stores	547		547	
	Total Electric Meters	9,134	4,171	7,846	3,059
	Difference		4,963		4,787

127	Electric Meter Installation	648	206	551	150
	Difference		442		401
128	Municipal Street Lighting System				
	Brackets and Miscellaneous Material	7,557		6,424	
	Lamps and Fixtures	9,052		7,694	
	Wire	6,035		5,432	
	Total Municipal Street Lighting System	22,644	17,067	19,550	14,477
	Difference		5,577		5,073
132	Electric Tools and Implements	225		191	
	Difference		225		191
133	Electric Laboratory Equipment	336		286	
	Difference		336		286
	Total Accounts 101 to 133 inclusive (with the exception of Account 102)	346,649	234,437	285,853	188,319
	Difference		112,212		97,534

Ref. Acct. No.	Detailed Apprasal Summary		Cost to Reproduce 1-1-22	Cost to Reproduce 1-1-20	Present Value 1-1-22	Present Value 1-1-20
	OVERHEAD COSTS:					
102	Preliminary and Organization Costs	(2%)	$6,932	$13,000	$5,717	$13,000
136	Law Expenditures during Construction elsewhere included			500		500
139	Administration Costs (Miscellaneous Construction Expenses)	(2%)	6,932	6,500	5,717	6,500
135	Engineering and Superintendence	(6%)	20,799	20,694	17,151	16,082
136	Taxes and Insurance	(1½%)	5,200	1,500	4,288	1,500
140	Loss of interest during construction	(3½%)	13,528	8,299	11,155	8,299
	Total Overhead Costs		$53,391	$50,493	$44,028	$45,881
	Difference 1922 over 1920			+2,898	−1,853	
	Totals all accounts including overheads		$400,040	$284,930	329,881	234,200
	Differences—Appraisal as of January 1, 1922, over that of January 1, 1920			+115,110		+95,681

COMPARISON OF DAY & ZIMMERMAN APPRAISALS AS GIVEN IN REPORT 1814 (COST TO REPRODUCE JANUARY 1, 1922) AND 1486 (COST TO REPRODUCE JANUARY 1, 1920)

Account Number		Changes in Cost due to Inventory Changes	Changes due to Re-valuation	Total Changes 1-1-22 from 1-1-20
101	Land	$2,500	($4,000)	($1,500)
107	General Equipment		300	300
108	Dams, Canals and Pipe Lines		2,606	2,606
109	Power Plant Buildings		12,510	12,510
110	Furnaces, Boilers and Acc.	4,917	18,252	23,169
111	Steam Engines	286	7,956	8,224
112	Turbines and Water Wheels		(4)	(4)
114	Gas Engines	($1,890)		($1,890)
115	Electric Generators	5,359	4,763	($1,890)
116	Accessory Electric Power Equipment		3,253	3,253
117	Misc. Power Plant Equip't.	338	1,175	1,513
120	Poles and Fixtures	6,718	19,631	26,349
123	Distribution System	1,952	3,610	5,562
124	Line Transformers and Devices	5,585	3,276	8,861
125	Electric Services	1,594		1,594
126	Electric Meters	4,608	355	4,963
127	Electric Meter Installation	325	117	442
128	Municipal Street Lighting System	822	4,755	5,577
132	Electric Tools and Implements	225		225
133	Electric Laboratory Equipment	336		336
	Overhead		2,898	2,898
	Total Net Increase	$33,657	$81,453	$115,110

Note 1:—Deductions are shown in parenthesis ( )

Note 2:—New items of inventory are included at 1922 appraisal unit prices.

MILLVILLE ELECTRIC LIGHT COMPANY
1922 RATE CASE

TABLE VIII

SAVING IN OPERATING EXPENSES FOR 1920, 1921, AND FOUR MONTHS OF 1922 ON BASIS OF PURCHASED POWER AND CORRESPONDING INCOME. PURCHASED POWER AT THREE CENTS.

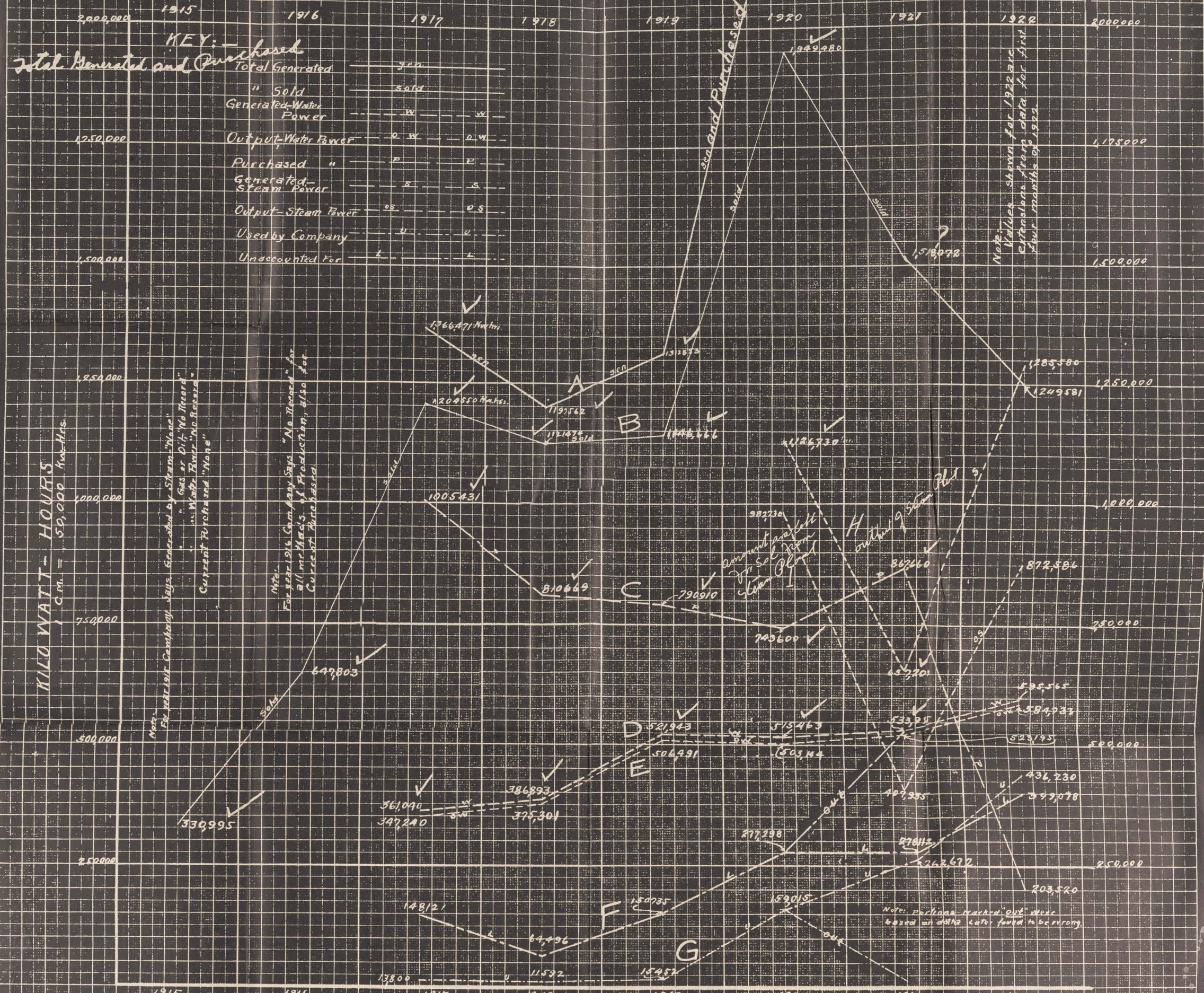
Year	Kw-hrs. Output	Net Production Cost
1920	982,730 kw-hrs.	$67,449.16
1921	407,935 kw-hrs.	37,880.10
1922 - 4 mos.	290,862 kw-hrs.	12,021.81
1920		
	982,730 kw-hrs. @ 3c=	29,481.90
Saving	$67,449.16 less $29,481.90=	37,967.26
	Loss for year 1920 reported	38,992.00
	Loss on basis of Purchased Power	1,025.00
1921		
	407,935 kw-hrs. @ 3c=	12,238.05
Saving	$37,880 less $12,238.05=	25,642.05
	1921 Income reported 7,410	7,410.00
	1921 Income on basis of Purchased Power	33,052.00
1922-1st 4 mos.		
	290,862 kw-hrs. @ 3c=	8,725.86
Saving	$12,021.81 less $8,725.86=	3,295.95
	Income as reported	4,182.00
	Income on basis of purchased power	7,478.00

SAVING IN OPERATING EXPENSES FOR 1920, 1921, AND FOUR MONTHS OF 1922 ON BASIS OF PURCHASED POWER AND CORRESPONDING INCOME. PURCHASED POWER AT 2.75c.

Year	Kw-hrs. Output	Net Production Cost
1920	982,730 kw-hrs.	$67,449.16
1921	407,935 kw-hrs.	37,880.10
1922 - 4 mos.	290,862 kw-hrs.	12,021.81
1920		
	982,730 kw-hrs. @ 2.75c=	$27,025.07
Saving	$67,449.16 less $27,025.07=	40,424.09
	Loss for year reported (1920)	38,992.00
	1921 Income on basis of Purchased Power	1,432.09
1921		
	407,935 kw-hrs. @ 2.75c=	$11,218.21
Saving	$37,880.10 less $11,218.21	26,661.89
	1921 Income reported	7,410.00
	1921 Income on bas's of Purchased Power	34,071.89
1922 - 1st 4 mos.		
	290,862 kw-hrs. @ 2.75c=	$7,998.70
Saving	$12,021.81 less $7,998.70=	4,023.11
	Income as reported	4,182.00
	Income on basis of Purchased Power	8,205.11

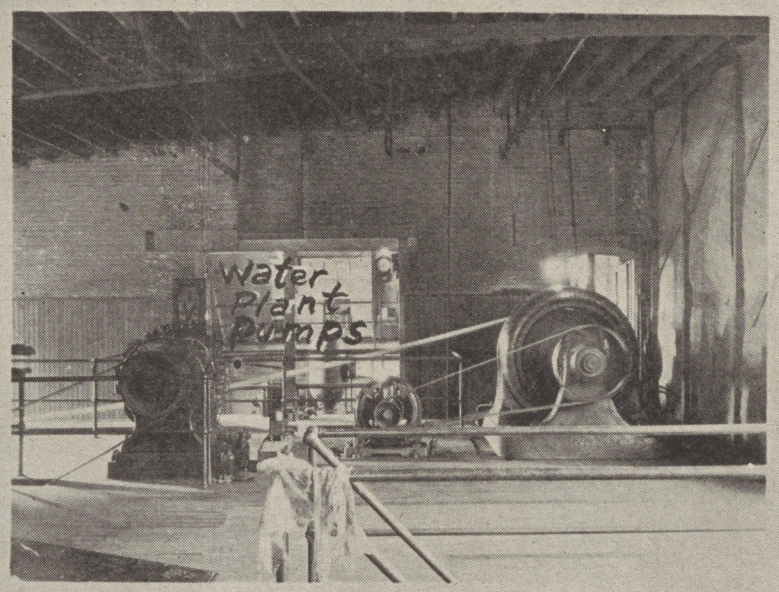
MILLVILLE ELECTRIC LIGHT COMPANY
VALUATION & RATE CASE.
Sheet "A" Exhibit No. P.I.

ENERGY RECORD 1917 TO 1922.

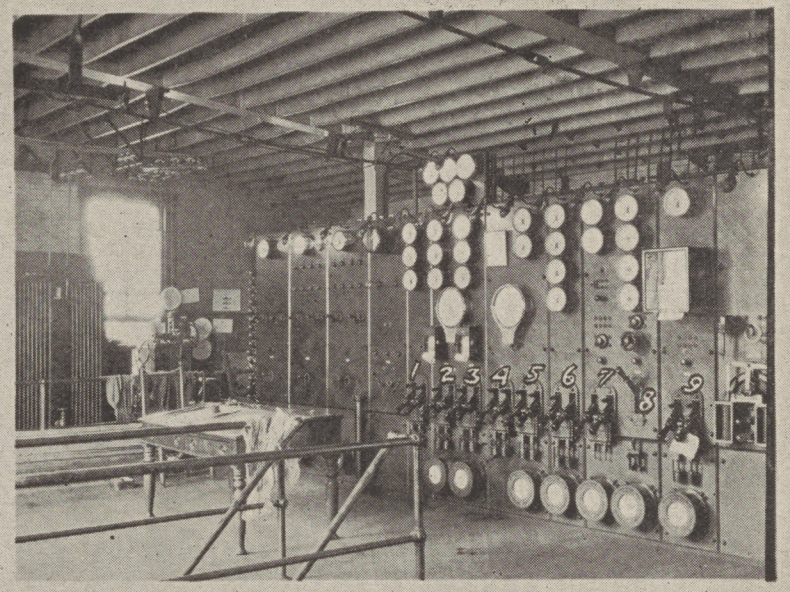


Sources of Power		1915	1916	1917	1918	1919	1920	1921	1922
		Water Power & Gas Engine	Power from Combined Water & Electric Plant, Shaft St. and Power Purchased from Millville Mfg. Co. Nearby				Power from Water Plant. Power Purchased from Millville Mfg. Co. Power from Steam Plant near Gas Works		
POWER FROM EACH SOURCE IN PERCENT OF TOTAL POWER AVAILABLE	Water Power		25.8 %	31.7 %	39.1 %		22.6 %	29.1 %	35.2 %
	Purchased		74.2 %	68.3 %	60.9 %		33.4 %	48.2 %	12.2 %
	Steam Power		00.0 %	00.0 %	00.0 %		44.0 %	22.7 %	52.6 %
	Total		100.0 %	100.0 %	100.0 %		100.0 %	100.0 %	100.0 %
Generated and Purchased	Unaccounted for,- Percent of Power Sold		12.3 %	5.75 %	13.15 %		14.23 %	10.3 %	31.9 %
	" " " " "		10.9	5.4	11.5		11.6	13.5	

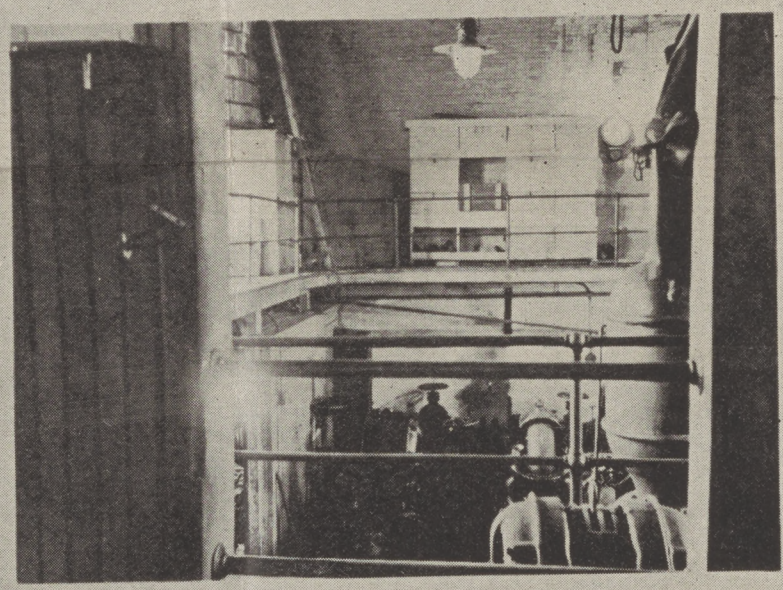
YEARS



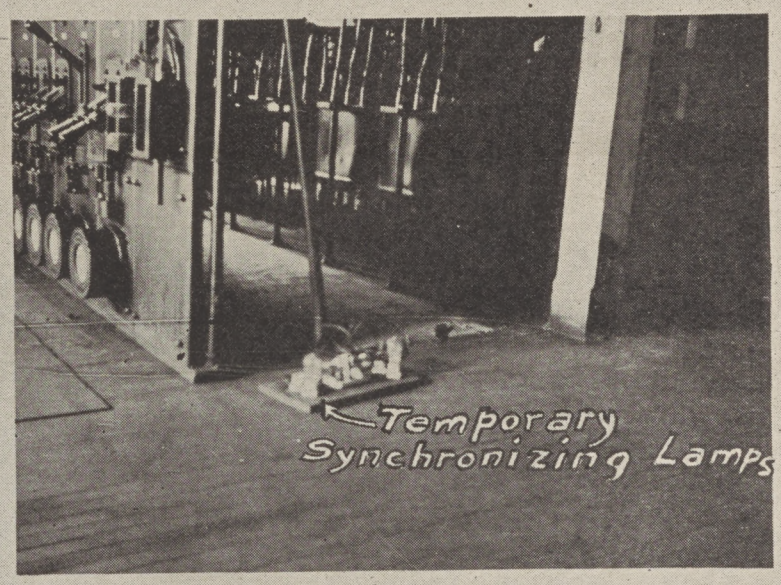
Hydro-Plant Machines (A)



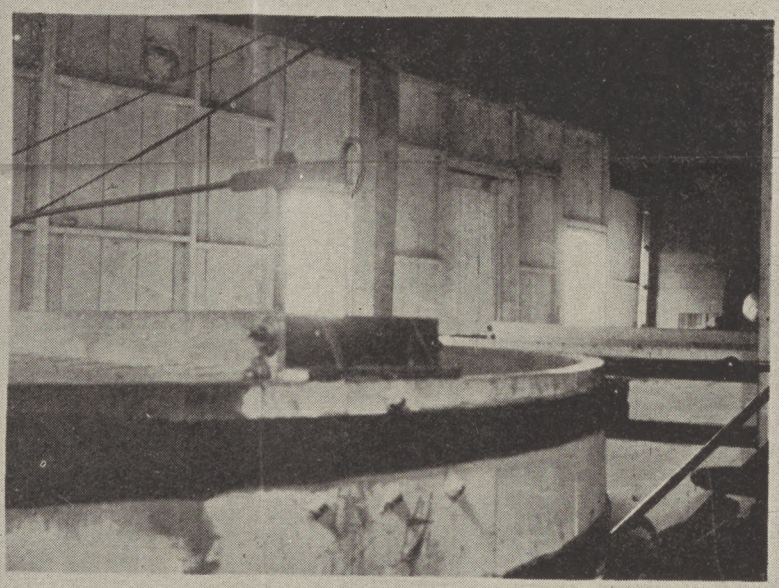
Switchboard, Hydro-Plant (B)



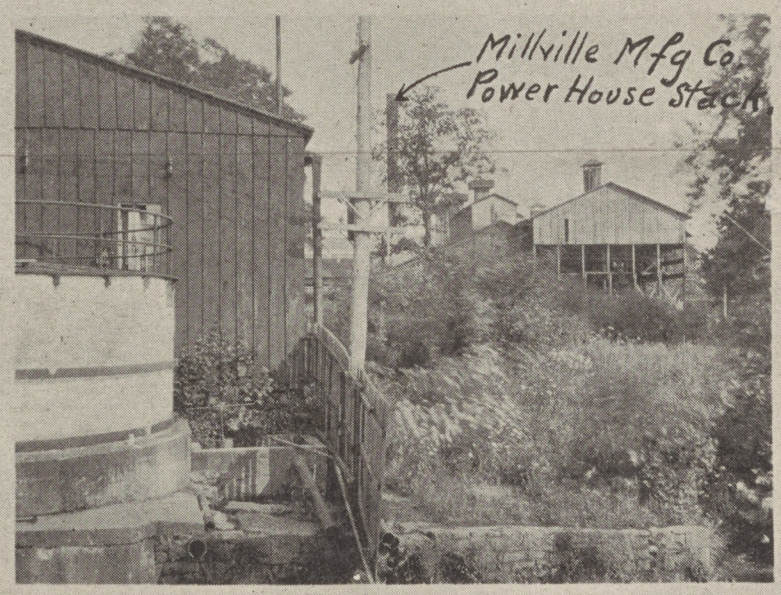
Pump Room – Hydro-Plant. (C)



Hydro Plant (D)



(E) Interior Filter Room Hydro Plant



Rear Hydro. Plant. (F)



Hydro-Plant Front N.E. Side (A)



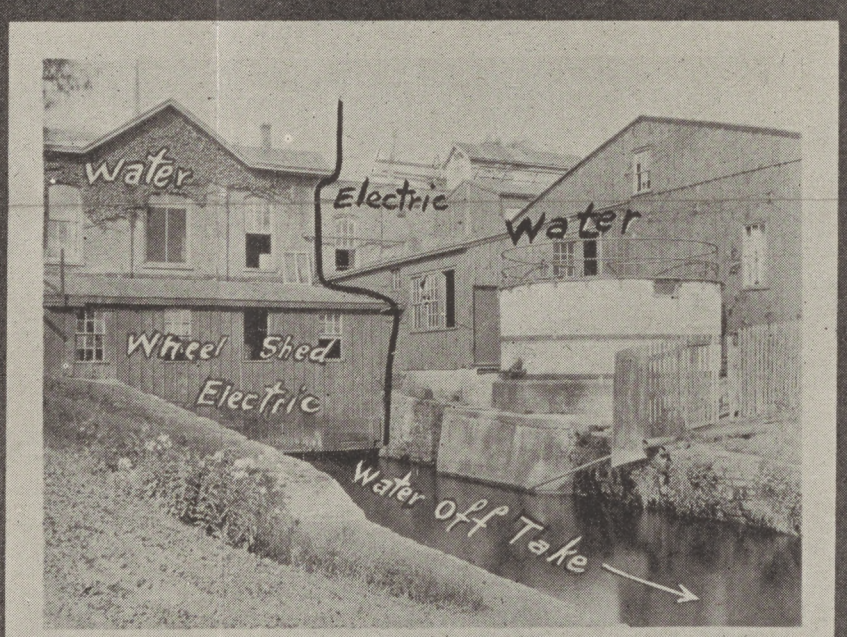
(B) Hydro-Plant Front N.E. Side



Hydro-Plant S.E. Side (C)



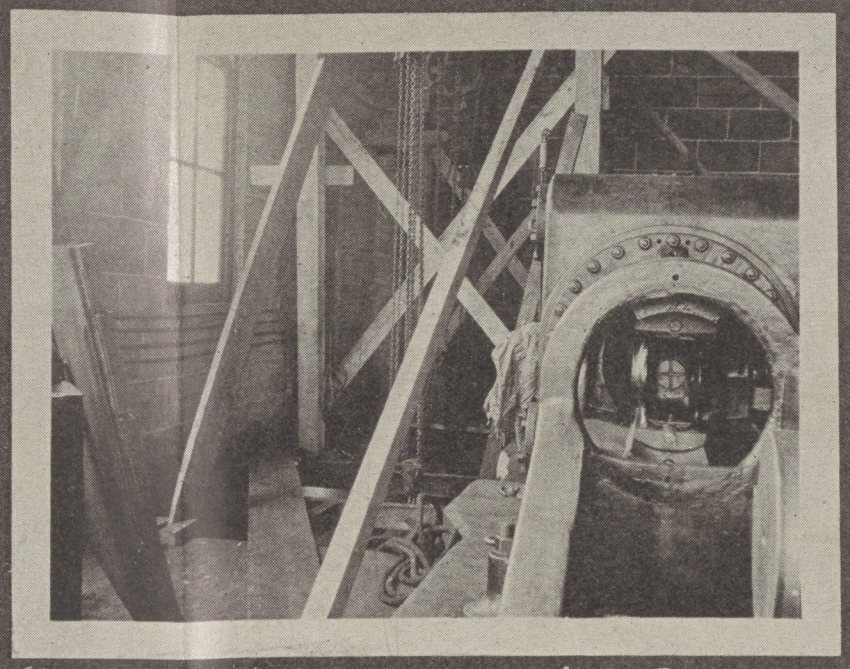
(D) Hydro-Plant. S.W. Side.



Hydro-Plant S.W. Side (E)



(F) Hydro-Plant.



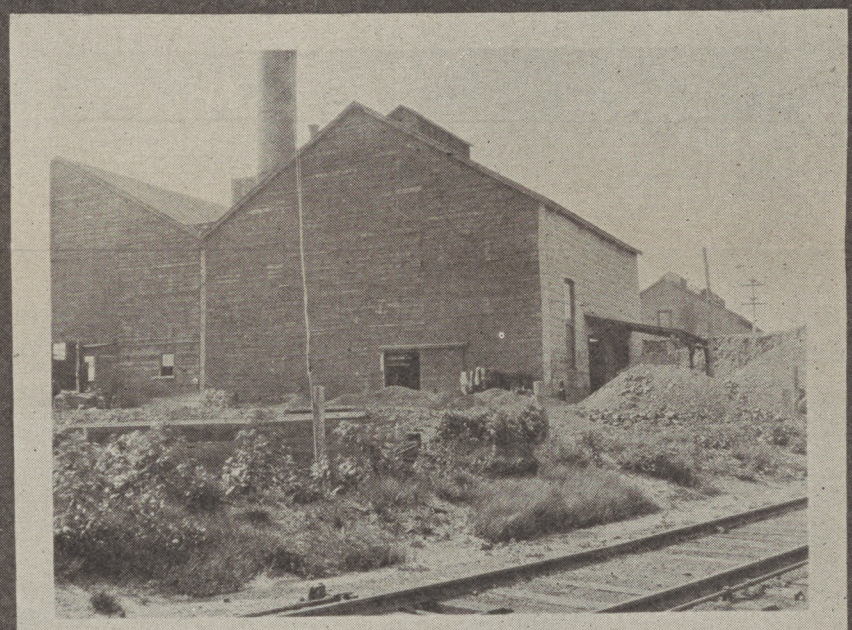
(A) Wrecked Engine, Low Pressure Cylinder.



Parts of Wrecked Engine (B)



(C) South Side Steam Plant

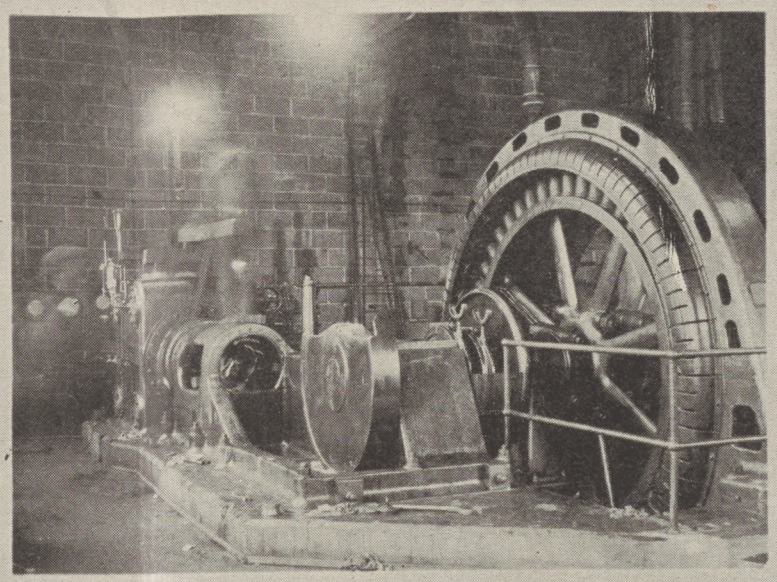


(D) Boiler Room End of Steam Plant

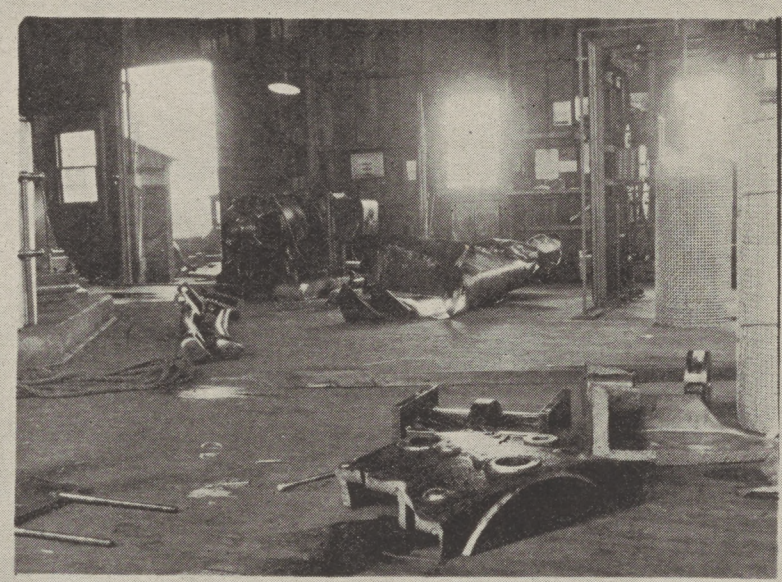


Exciters Steam Plant (E)

Millville Elect. Lt. Co. Case.



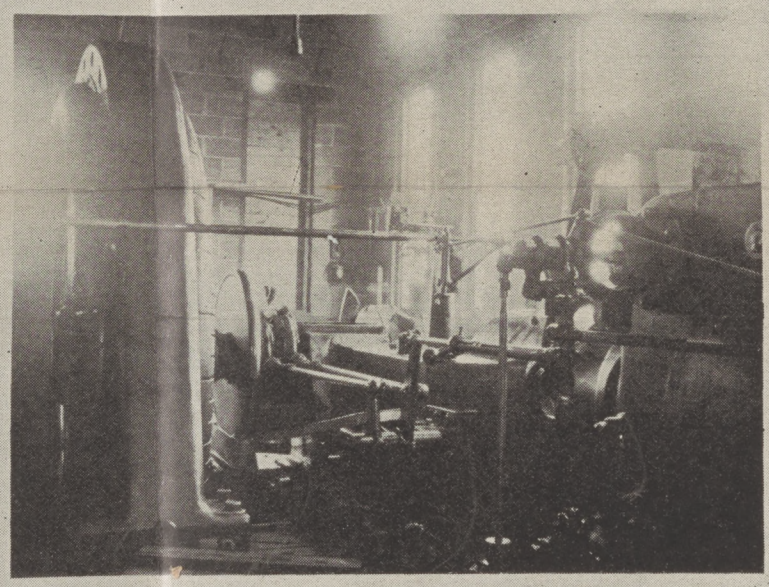
"A"



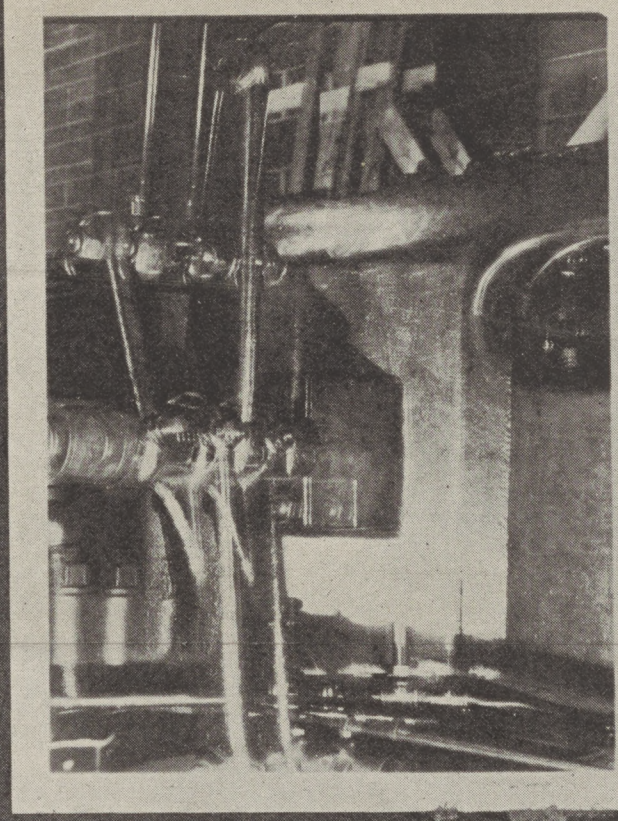
Millville Electric Light Company

Valuation and Rate Case.

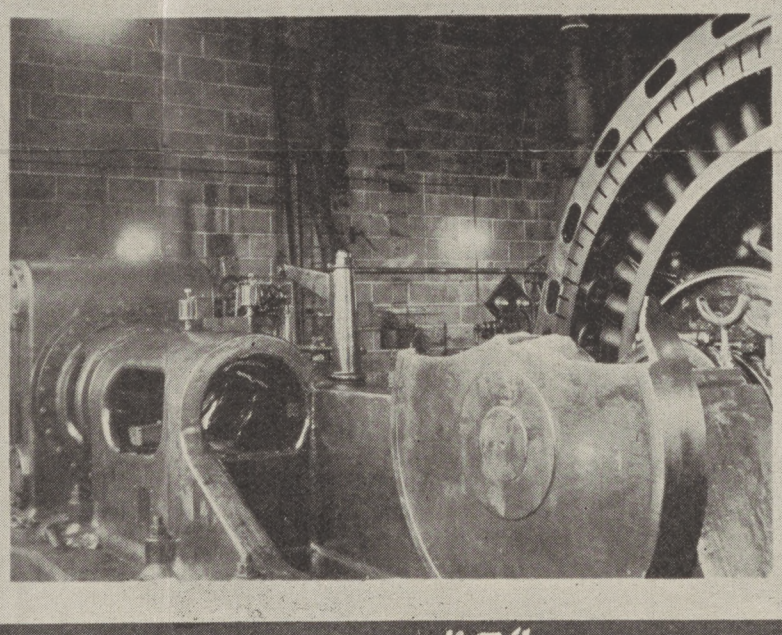
Card of Photographs to Accompany,(and part of), Exhibit P-31. Referred to on page 27, etc. therein. Views "A", "B", "C", & "E", show wreck of Resp. Engine on, or about, March 15, 1923. View "D" shows where 1921 break occurred due to wear,from long use, of valve rocker arm.(l.p.side) Part shown is, of course, not one that broke, but replaced broken one.



"C"

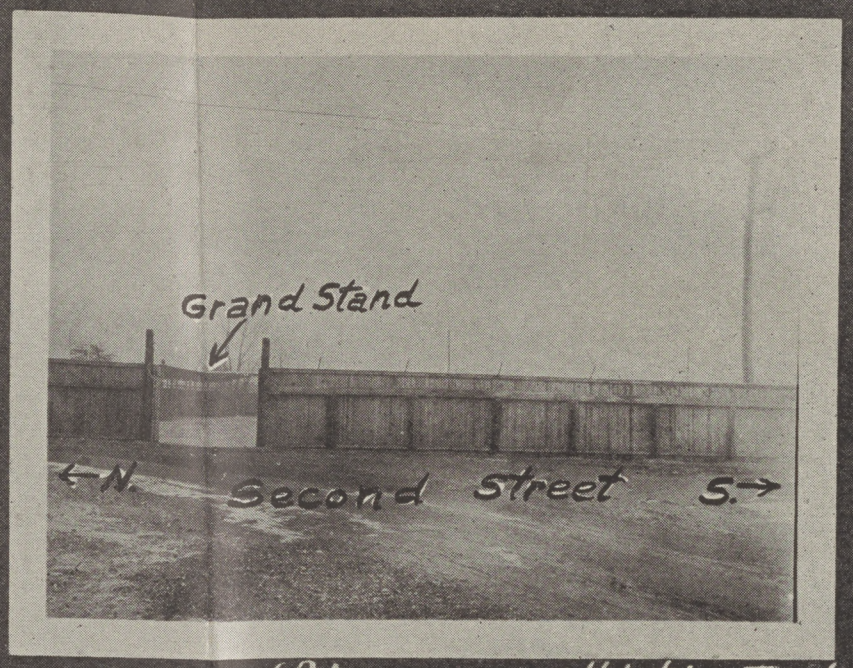


"D"



"E"

Photos taken mar 16-1923 at Steam Plant Millville Elect. Light Company.



(A)



(B)

Athletic Field Fence



(C) Athletic Field Grandstand



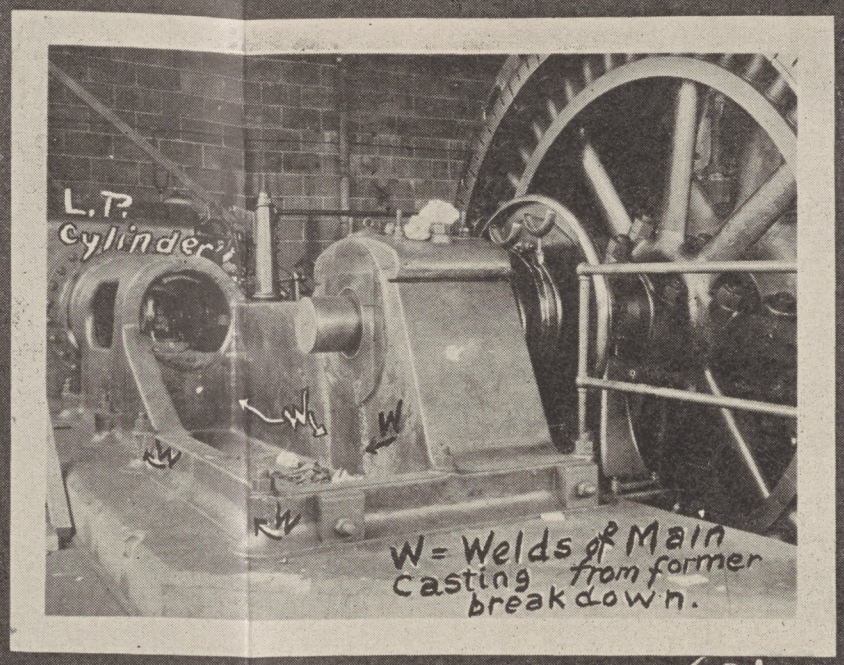
So. Side Cooling Pond E. side (D)



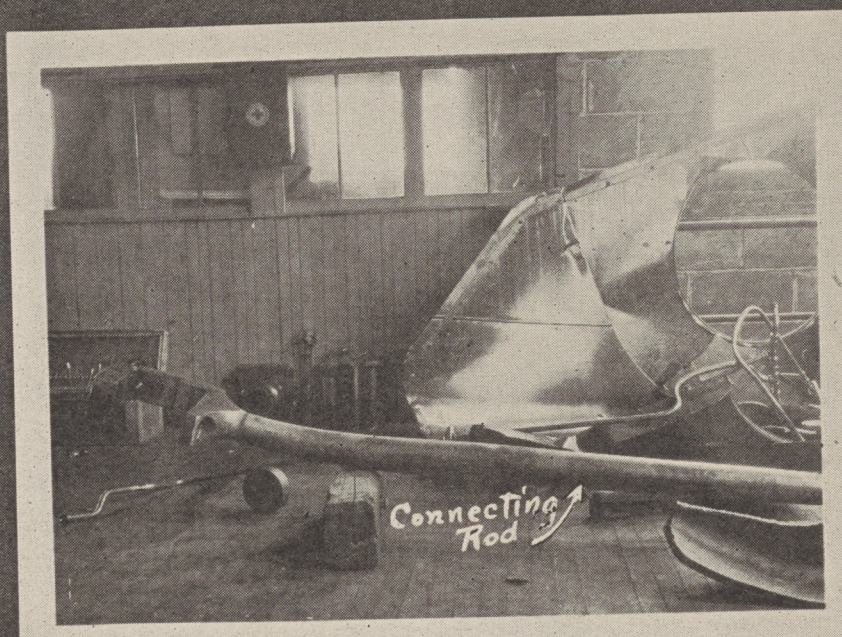
(E) Cooling Pond & Rear of Grandstand



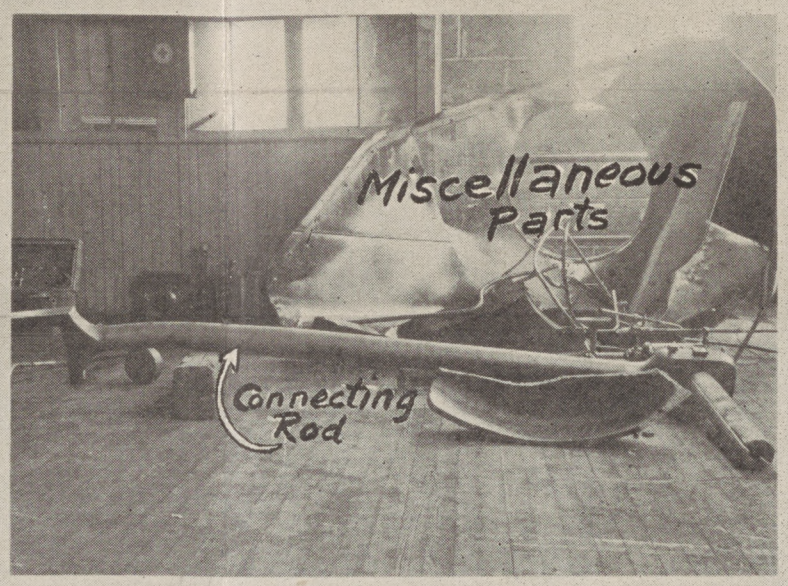
(F) Steam Plant Lot looking South.



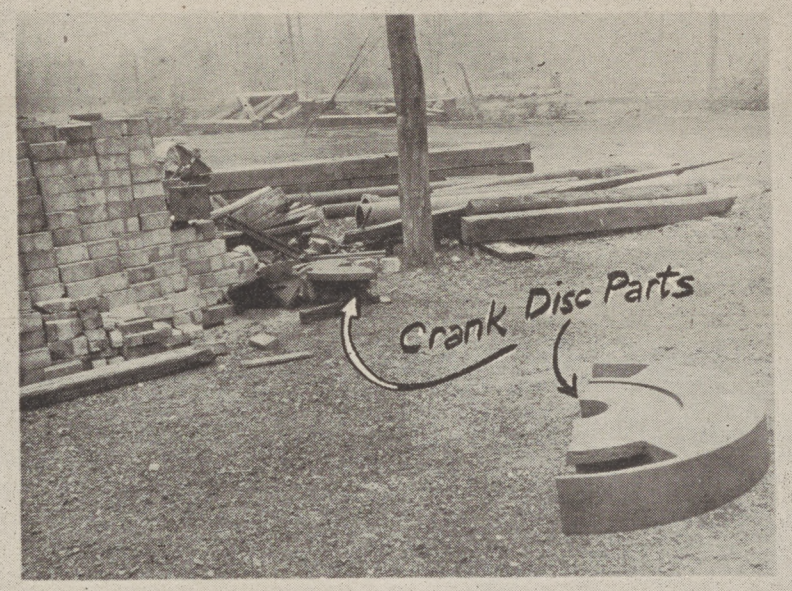
(A)



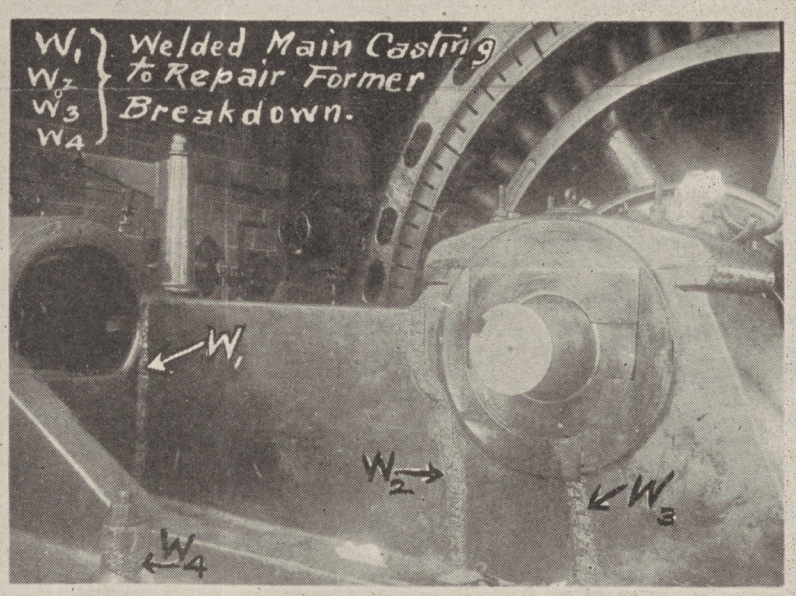
(B)



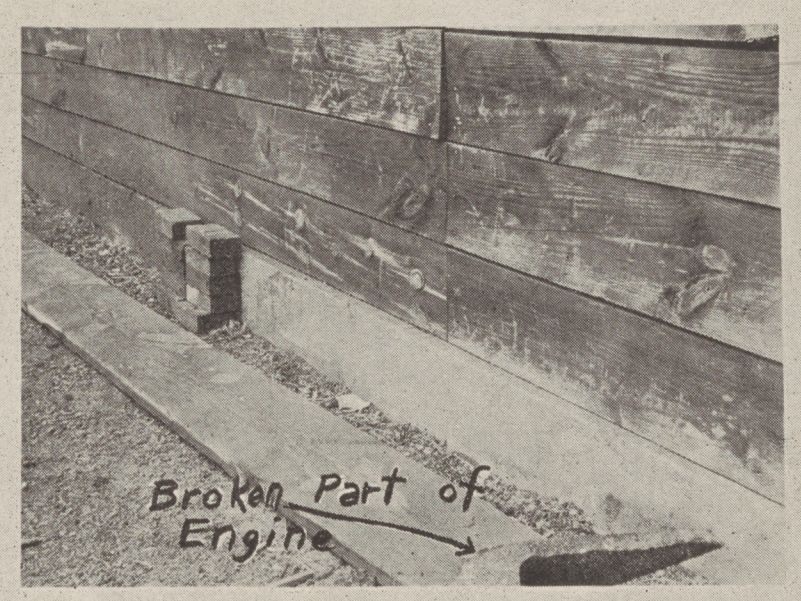
(C)



(D)



(E)



(F)

Photographs of Wrecked Engine, Steam Plant, Milville Elect. Light Co.

SAVING IN OPERATING EXPENSES FOR 1920, 1921, AND FOUR MONTHS OF 1922 ON BASIS OF PURCHASED POWER AND CORRESPONDING INCOME. PURCHASED POWER AT 2.5c

Year	Kw-hrs. Output	Net Production Cost
1920	982,730 kw-hrs.	$67,449.16
1921	407,935 kw-hrs.	37,880.10
1922 - 4 mos.	290,862 kw-hrs.	12,021.81
1920		
	982,730 kw-hrs @ 2.5c=	$24,568.25
Saving	$67,449.16 less $24,568.25=	42,880.91
	Loss for year reported (1920)	38,992.00
	1921 Income in basis of Purchased power	3,888.91
1921		
	407,935 kw-hrs. @ 2.5c=	$10,198.37
Saving	$37,880.10 less $10,198.37=	27,681.73
	1921 Income reported	7,410.00
	1921 Income on basis of Purchased Power	35,091.73
1922 - 1st 4 mos.		
	290,862 kw-hrs. @ 2.5c=	$7,271.55
Saving	$12,021.81 less $7,271.55=	4,750.26
	Income as reported	4,182.00
	Income on basis of Purchased Power	8,932.26

EXHIBIT P—12

MILLVILLE ELECTRIC LIGHT COMPANY

VALUATION AND RATE CASE

COSTS OF PRODUCTION AND OPERATION

PRODUCTION, 1917.

NOTE: For Accounts not listed herein no charges are reported.

HYDRO-ELECTRIC PLANT.

(Apportionment sold, 309,050 kw. hrs.)

Account Number	Items	Amount Dollars	p.c. kw. hr. sold
401	Station Wages,	2592.41	.837
403	Other Station Supplies and Expenses,	680.44	.220
410	Station Repairs,	944.62	.305
	Total, Hydro-Electric Plant, 1917	4,217.47	1.362

PURCHASED POWER

(Apportionment sold, 895,500 kw. hrs.)

419	Electric Energy from Other Sources,	18,027.01	2.014

STEAM PLANT

(Not in operation.)

Total Sold,
1,204,550 kw. hrs.

	Total Cost of Production, all Sources, 1917,	22,244.48	1.848

DISTRIBUTION, UTILIZATION, AND OVERHEAD COSTS, 1917.

(Total kw. hrs. sold—1,204,550)

DISTRIBUTION.

Account Number	Items	Amount Dollars	p.c. kw. hr. sold
440	Distribution Wages, Supplies and Expenses,	603.31	.050
450	Distribution Maintenance,	480.52	.039
	Total Distribution, 1917,	1,083.83	.089

UTILIZATION

464	Municipal Street Arc Maintenance,	589.21	.049
465	Municipal Street Incandescent Maintenance,	5,119.57	.424
	Total Utilization, 1917,	5,708.78	.473

OVERHEAD ACCOUNTS.

470	Commercial Administration,	166.49	.014
475	Business Promotion,	183.14	.015
481	Salaries and Expenses of General Officers,	1,529.06	
482	Salaries and Expenses General Office Clerks,	2,361.50	
483	General Office Supplies and Expense,	488.42	
484	General Law Expense,	2,008.46	
485	Miscellaneous General Expense,	436.55	
486	Insurance,	360.00	
489	Injuries—Person and Property,	21.55	
490	Stationery and Printing,	214.16	
491	Store and Stable or Garage Expenses,	172.41	
	Total, Accounts 481–491 inc.,	7,592.11	.630
494	General Amortization,	7,834.62	.651
495	Taxes	2,480.80	.206
	Total, Accounts 440-495 inc.,	25,049.77	2.078
	Production Costs, (from page 18),	22,244.48	1.848
	Total Operating Costs, 1917,	47,294.25	3.926

PRODUCTION, 1918.

HYDRO-ELECTRIC PLANT.

(Apportionment sold, 355,090 kw. hrs.)

Account Number	Items	Amount Dollars	p.c. kw. hr. sold
401	Station Wages,	4,354.10	1.226
403	Other Station Supplies and Expenses,	340.17	.096
411	Repairs Station Buildings,	4.97	.0014
413	Repairs Hydraulic Equipment,	362 22	.102
415	Repairs Electric Equipment,	360.50	.101
416	Miscellaneous Station Repairs,	11.13	.0031
	Total, Hydro-Electric Plant, 1918,	5,433.09	1.530

PURCHASED POWER.

(Apportionment Sold, 766,380 kw. hrs.)

419	Electrical Energy from Other Sources,	16,404.38	2.140

STEAM PLANT.

(Not in Operation.)

Total Sold,
1,121,474 kw. hrs.

	Total Cost of Production, all Sources, 1918,	21,837.47	1.950

DISTRIBUTION, UTILIZATION, AND OVERHEAD COST, 1918.

DISTRIBUTION.

Account Number	Items	Amount Dollars	p.c. kw. hr. sold
440	Distribution Wages, Supplies and Expenses,	618.80	.055
451	Repairs of Lines,	1,049.44	.094
453	Transformer Maintenance,	11.25	.001
454	Meter Maintenance,	14.75	.001
	Total Distribution, 1918,	1,694.24	.151

UTILIZATION

464	Municipal Street Arc Maintenance,	608.34	.054
465	Municipal Street Incandescent Maintenance,	4,648.65	.414
	Total Utilization, 1918,	5,257.79	.468

OVERHEAD ACCOUNTS.

470	Commercial Administration,	931.39	.083
475	Business Promotion,	199.83	.018
481	Salaries and Expenses, General Officers,	1,908.57	
482	Salaries and Expenses, General Office Clerks,	2,754.33	
483	General Office Supplies and Expense,	425.40	
484	General Law Expense,	2,151.19	
485	Miscellaneous General Expense,	480.29	
486	Insurance,	360.00	
489	Injuries, Person and Property,	1.00	
490	Stationery and Printing,	171.25	
491	Store and Stable or Garage Expenses,	24.31	
	Total, Accounts 481-491 inc.,	8,276.34	.738
494	General Amortization,	7,922.06	.706
495	Taxes,	3,001.08	.268
496	Uncollectable Bills,	1,373.95	.123
	Total, Accounts 440-496 inc.,	28,656.68	2.555
	Production Costs, (page 3),	21,837.47	1.950
	Total Operating Costs, 1918,	50,494.15	4.505

PRODUCTION, 1919.

HYDRO-ELECTRIC PLANT.

(Apportionment Sold, 447,150 kw. hrs.)

Account Number	Items	Amount Dollars	p.c. kw. hr. sold
401	Station Wages,	5,355.46	1.198
403	Other Station Supplies and Expenses,	521.78	.117
411	Repairs, Station Buildings,	15.03	.0034
413	Repairs, Hydraulic Equipment,	43.11	.0096
415	Repairs, Electric Equipment,	232.44	.052
416	Miscellaneous Station Repairs,	84.58	.019
	Total, Hydro-Electric Plant, 1919,	6,252.40	1.399

PURCHASED POWER.

(Apportionment Sold, 699,510 kw. hrs.)

419	Electric Energy from Other Sources,	15,968.20	2.282

STEAM PLANT

(Not in operation.)

Total Sold,
1,146,666 kw. hrs.

	Total Cost of Production, all Sources, 1919,	22,220.60	1.942

DISTRIBUTION, UTILIZATION, AND OVERHEAD COSTS, 1919.

DISTRIBUTION.

Account Number	Items	Amount Dollars	p.c. kw. hr. sold
440	Distribution Wages, Supplies and Expenses,	1,319.65	.115
451	Repairs of Lines,	1,587.60	.138
452	Repairs of Services,	1.94	
454	Meter Maintenance,	628.98	.055
	Total Distribution, 1919,	3,538.17	.308

UTILIZATION

464	Municipal Street Arc Maintenance,	867.77	.076
465	Municipal Street Incandescent Maintenance,	6,854.56	.598
	Total, Utilization, 1919,	7,722.33	.674

OVERHEAD ACCOUNTS.

470	Commercial Administration,	1,045.01	.091
475	Business Promotion,	90.13	.008
481	Salaries and Expense General Officers,	1,215.60	
482	Salaries and Expense General Office Clerks,	2,381.40	
483	General Office Supplies and Expenses,	636.93	
484	General Law Expense,	968.88	
485	Miscellaneous General Expense,	439.76	
486	Insurance,	398.75	
489	Injuries, Person and Property,	21.44	
490	Stationery and Printing,	284.58	
491	Store and Stable or Garage Expense,	25.82	
	Total, Accounts 481-491 inc.,	6,373.16	.556
494	General Amortization,	6,690.79	.583
495	Taxes,	2,727.87	.238
	Total, Accounts 440-495 inc.,	28,187.46	2.458
	Production Costs, (Page 22),	22,220.60	1.942
	Total Operating Costs, 1919,	50,408.06	4.400

PRODUCTION, 1920.

HYDRO-ELECTRIC PLANT.

(Apportionment Sold, 439,955 kw. hrs.)

Account Number	Items	Amount Dollars	p.c. kw. hr. sold
401	Station Wages,	6,025.76	1.370
403	Other Station Supplies and Expenses,	525.31	.119
	Lubricants,	470.53	.107
411	Repairs, Station Buildings,	30.03	.007
413	Repairs, Hydraulic Equipment,	963.64	.219
415	Repairs, Electric Equipment,	1,025.94	.233
416	Miscellaneous Station Repairs,	1.50	
	Total, Hydro-Electric Plant, 1920,	9,042.71	2.055
	Deduction, Power Credit,	615.95	.140
	Net, Hydro-Electric Plant, 1920,	8,426.76	1.915

PURCHASED POWER.

(Apportionment Sold, 650,214 kw. hrs.)

419	Electric Energy, Other Sources,	18,624.60	2.864

STEAM PLANT

(Apportionment Sold, 859,311 kw. hrs.)

401	Station Wages,	5,808.59	.677
	Boiler Labor,	9,565.62	1.112
	Total, Account 401, Steam Plant,	15,374.21	1.789
402	Fuel, (Steam),	67,633.21	7.875
403	Other Station Supplies and Expenses,	9,690.06	1.128
	Lubricants,	1,601.82	.187
411	Repairs, Station Buildings,	38.50	.004
412	Repairs, Steam Equipment,	2,061.20	.240
413	Repairs, Electric Equipment,	210.19	.024
416	Miscellaneous Station Repairs,	2.25	
	Total, Steam Plant, 1920,	96,611.44	11.247
	Credits:		
	Steam Sales to gas plant, $21,962.28		
	Power Credit, 7,200.00		
	Total Credit, $29,162.28	29,162.28	3.390
	Net, Steam Plant, 1920,	67,449.16	7.857
	Total Sold, 1,949,480 kw. hrs.		
	Net Total Cost of Production, all Sources, 1920,	94,500.52	4.840

DISTRIBUTION, UTILIZATION, AND OVERHEAD COST, 1920.

DISTRIBUTION.

Account Number	Items	Amount Dollars	p.c. kw. hr. sold
440	Distribution Wages, Supplies and Expenses,	1,532.24	.079
451	Repairs of lines,	4,014.20	.206
452	Repairs of Services,	2.40	
453	Transformer Maintenance,	97.27	.005
454	Meter Maintenance,	417.46	.021
	Total Distribution, 1920,	6,063.39	.311

UTILIZATION

464	Municipal Street Arc Maintenance, Operation,	617.73	
	Municipal Street Arc Maintenance, Repairs,	255.17	
	Total, Account 464,	872.90	.045
465	Municipal Street Incandescent Maintenance, Operation,	2,983.50	
	Municipal Street Incandescent Maintenance, Repairs,	314.61	
	Total Account 465,	3,298.11	.169
	Total Utilization, 1920,	4,171.01	.214

OVERHEAD ACCOUNTS.

470	Commercial Administration,	886.36	.045
475	Business Promotion,	86.01	.004
481	Salaries and Expenses, General Officers,	3,240.06	
482	Salaries and Expenses, General Office Clerks,	3,079.98	
483	General Office Supplies and Expenses,	894.58	
484	General Law Expense,	1,489.93	
485	Miscellaneous General Expense,	2,087.95	
486	Insurance,	418.08	
489	Injuries, Persons and Property,	196.30	
490	Stationery and Printing,	201.34	
491	Store and Stable or Garage Expenses,	27.00	
	Totals, Accounts 481-491 inc.,	11,635.22	

*492	*(Deduction, Power Credit, etc., Misc. adjustments, Balance)	229.56	
	Net Total, Accounts 481-492, inc.,	11,405.66	.585
494	General Amortization,	13,134.28	.674
495	Taxes,	2,724.38	.140
496	Uncollectable Bills,	126.06	.006
	Total (Net) Accounts 440-496 inc.,	38,597.15	1.979
	Production Costs, (Page 24),	94,500.52	4.840
	**Total Operating Costs, 1920 (Net),	133,097.67	6.819

(*) Note:—Total reported on account No. 492 is $8,045.51. Of this amount there has been credited and deducted under "PRODUCTION:"

Hydro-Plant,	$615.95
Steam Plant,	7,200.00
Total,	$7,815.95
Above Credit,	229.56
Total, Account 492,	$8,045.51

(**):—(CHECK), Net Oper'n Cost,	$133.097.67
Revenue, Sale Steam, Gas Co.	21.962.28
Gross Oper'n Expense Rep.	$155,059.95

PRODUCTION, 1921.

HYDRO-ELECTRIC PLANT

(Apportionment Sold, 1,518,072 kw. hrs.)

Account Number	Items	Amount Dollars	p.c. kw. hr. sold
401	Station Wages,	5,531.73	1.261
403	Other Station Supplies and Expenses,	863.78	.196
	Lubricants,	329.32	.075
411	Repairs, Station Buildings,	238.19	.055
413	Repairs, Hydraulic Equipment,	537.89	.122
415	Repairs, Electric Equipment,	538.91	.122
	Total Hydro-Elect. Plant, 1921	8,039.82	1.826
	Deduct. Power Credit,	541.80	.123
	Net, Hydro-Elect. Plant, 1921	7,498.02	1.703

PURCHASED POWER

(Apportionment Sold, 732,268 kw. hrs.)

419	Electric Energy, Other Sources,	26,179.80	3.586

STEAM PLANT

(Apportionment Sold,)
(344,280 kw. hrs.)

401	Station Wages,	4,151.40	1.205
	Boiler Labor,	6,926.90	2.014
	Total Account 401, Steam Plant,	11,078.39	3.219
402	Fuel, (Steam),	32,279.97	9.360
403	Other Station Supplies and Expenses,	3,388.72	.983
	Lubricants,	384.62	.112
411	Repairs, Station Buildings,	544.58	.158
412	Repairs, Steam Equip., (Engine),	10,245.90	2.970
	Repairs, Steam Equip., (Other),	7,420.89	2.155
	Total, Account 412, (Steam Plant),	17,666.79	5.125
415	Repairs, Electrical Equipment,	192.45	.058
	Total, Steam Plant, 1921,	65,535.52	19.015
	Credit, Steam to Gas Plant,	27,655.42	8.020
	Net, Steam Plant, 1921,	37,880.10	10.995
	*Total Sold, 1921, 1,518,072 kw. hrs.		
	Net Total Cost of Production, all Sources, 1921,	71,557.92	4.720

(*) Note:—On page 34 of Annual Report, 1921, Company shows 1,518,071.5 kw. hrs.
On page 22 of Annual Report, 1921, Company shows 1,516,281.5 kw. hrs.

Difference is, 1,790 kw. hrs.

Difference is less than 1-8 of one per cent. Larger figure slightly favors Company in "Unit Cost" determination and it was therefore used.

DISTRIBUTION, UTILIZATION, AND OVERHEAD COST, 1921.

DISTRIBUTION.

Account Number	Items	Amount Dollars	p.c. kw. hr. sold
440	Distribution Wages, Supplies and Expenses,	2,755.52	.181
451	Repairs of Lines,	3,111.67	.205
452	Repairs of Services,	367.53	.024
453	Transformer Maintenance,	238.38	.016
454	Meter Maintenance,	71.49	.005
	Total Distribution, 1921,	6,544.59	.431

UTILIZATION

464	Municipal Street Arc Maintenance,	595.52	.039
465	Municipal Street Incandescent Maintenance,	4,208.55	.283
	Total, Utilization, 1921,	4,804.07	.322

OVERHEAD ACCOUNTS.

470	Commercial Administration,	770.71	.051
475	Business Promotion,	294.43	.019
481	Salaries and Expenses, General Officers,	3,223.08	
482	Salaries and Expenses, General Office Clerks,	3,176.66	
483	General Office Supplies and Expenses,	964.12	
484	General Law Expense,	1,598.21	
485	Miscellaneous General Expenses,	944.27	
486	Insurance,	2,498.73	
489	Injuries, Persons and Property,	130.83	
490	Stationery and Printing,	368.10	
491	Store and Stable or Garage Expense,	255.78	
	Total, Accounts 481-491 inclusive,	13,159.78	
*492	*Misc. Adjustments, Balance, Power Credit, etc.,	107.77	
	Net Total, Accts. 481-492 inclusive,	13,052.01	.860
494	General Amortization,	400.46	.026
495	Taxes,	6,333.59	.417
496	Uncollectable Bills,	25.64	.002
	Net Total, Accts. 440-496 inclusive	32,225.50	2.128
	Production Costs, (Page 27),	71,557.92	4.720
	Net Total Oper'n Cost, 1921,	103,783.42	6.848
	CHECK—Add Revenue, Sale Steam Gas Plant,	27,655.42	1.822
	Gross Oper'n, Cost Reported,	131,438.84	8.670

(*) Note:—Total reported on Account 492 is $649.57. Of this amount there has been credited under "PRODUCTION," $541.80 (Hydro-Electric Plant). Above deduction, $107.77.

MILLVILLE ELECTRIC LIGHT COMPANY
VALUATION & RATE CASE
Sheet "C"

Exhibit No. P. 13

SOLD POWER - Kw. Hrs.
1915 – 1922

KEY:—

- Total Reported Sold, — A
- Sold, - Less "Used in Water Plant" (See Curve E), — B
- Sold, General Public, — C
- Comm'l Power to Public, — D
- Used in Water Plant, — E
- Reported Sold for St. Lighting, — F
- Comm'l Lighting to Public — G

KILO WATT-HOURS 1 cm. = 50000 Kw. hrs.

2,000,000
1,750,000
1,500,000
1,250,000
1,000,000
750,000
500,000
250,000

1,204,550
1,121,474
1,146,666
1,044,602
980,683
775,607
647,803
330,995
537,219
343,876
518,478
537,716
316,603
730,289
697,850
1,919,430
1,461,926
1,150,563
828,586
1,241,581
843,243
674,829
521,584
487,554
314,313
262,833
257,129
220,047
201,670
168,602
140,791
102,064
213,686
160,134
321,282
311,358
348,282
321,657
347,709
149,676
128,943
110,948
108,914

1915 | 1916 | 1917 | 1918 | 1919 | 1920 | 1921 | 1922

YEARS.

{Steam Plant begins Operation 1920.}

{Rate Increase in Force →}

MILLVILLE ELECTRIC LIGHT COMPANY

VALUATION & RATE CASE.

Sheet "D"

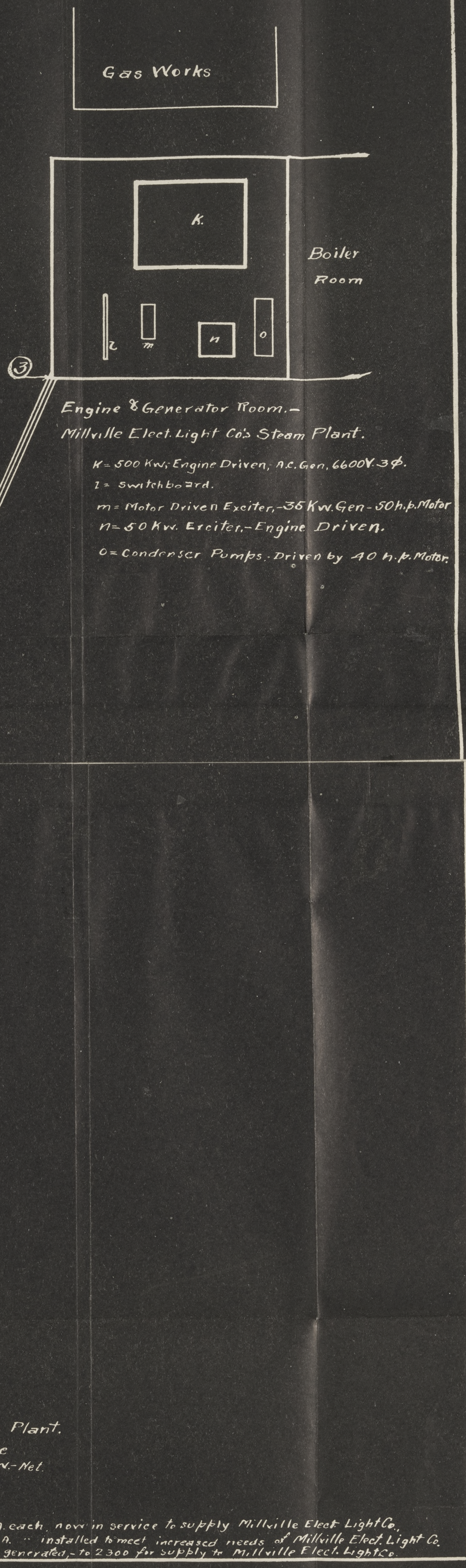
Exhibit No. P 14

LOCATION OF POWER SOURCES.

Approx. Distances:

From ① (Hydro-Elect. Plant) to ② (Millville Mfg. Plant) 850 ft.

" ① (" " ") " ③ (M.E.L.Co. Steam Plant) 13000 ft.



PRODUCTION, JANUARY, FEBRUARY, MARCH AND APRIL, 1922.

HYDRO-ELECTRIC PLANT,

(Apportionment Sold, 146,500 kw. hrs.)

Account Number	Items	Amount Dollars	p.c. kw. hr. sold
401	Station Wages,	1,758.42	1.199
403	Other Station Supplies and Expenses,	412.46	.282
	Lubricants,	111.85	.076
411	Repairs, Station Buildings,	30.00	.021
413	Repairs, Hydraulic Equipment,	183.43	.125
415	Repairs, Electric Equipment,	172.21	.118
	Total, Hydro-Electric Plant, 1922	2,668.37	1.821

PURCHASED POWER

(Apportionment Sold, 51,230 kw. hrs.)

419	Electric Energy, Other Sources,	2,085.20	4.07

STEAM PLANT,

(Apportionment Sold, 218,800 kw. hrs.)

401	Station Wages,	1,867.50	.853
	Boiler Labor,	2,438.76	1.112
	Total, Account 401, Steam Plant,	4,306.26	1.965
402	Fuel, (Steam),	11,486.00	5.249
403	Other Station Supplies and Expenses,	1,270.59	.580
	Lubricants,	174.71	.080
411	Repairs, Station Buildings,	24.08	.011
412	Repairs, Steam Equip. (Engine),	1,272.13	.582
	Repairs, Steam Equip. (Other),	1,788.70	.818
	Total, Account 412, Steam Plant,	3,060.83	1.400
415	Repairs, Electric Equipment,	4.87	.002
416	Miscellaneous Station Repairs,	29.00	.013
	Total, Steam Plant, 1922,	20,356.34	9.300
	Credit, Steam to Gas Plant,	8,334.47	3.800
	Net Cost, Steam Plant, 1922	12,021.87	5.500
	Total Sold, 1922,	416,527 kw. hrs.	
	Net Cost of Production, all Sources, 1922,	16,775.44	4.030

DISTRIBUTION, UTILIZATION, AND OVERHEAD COST, JANUARY, FEBRUARY, MARCH AND APRIL, 1922.

DISTRIBUTION.

Account Number	Items	Amount Dollars	p.c. kw. hr. sold
440 to 454 inc.	No details given, Total, 4 months, 1922,	2,051.11	.493

UTILIZATION

464 and 465	No details given. Total, 4 months, 1922,	2,750.89	.661

OVERHEAD ACCOUNTS.

470	Commercial Administration,	193.97	.047
475	Business Promotion,	80.50	.019
481 to 492 inc.	No details given. Total, Accounts 481-492 inclusive,	3,789.45	.910
494	General Amortization,	3,295.83	.791
495	Taxes,	2,425.12	.582
496	Uncollectable Bills,	42.79	.010
	Total (Net) Accts. 440-496 inc.,	14,629.66	3.513
	Production Costs, (Page 29),	16,775.44	4.030
	Net Total Operating Cost, 1922, four months,	31,405.10	7.543
	CHECK–Add Revenue, Sale Steam, Gas Plant,	8,334.47	2.002
	Gross Operating Costs, 1922, first four months,	39,739.57	9.345

EXHIBIT P—15

MILLVILLE ELECTRIC LIGHT COMPANY

VALUATION AND RATE CASE

LOSS DUE TO STEAM PLANT OPERATION

BASED ON ACTUAL COSTS OF POWER PURCHASED AND STEAM PLANT OPERATING COSTS.

1920.

Steam Plant output 982,730 kw. hrs., net cost,	$67,449.16
Average cost of purchased power was 2.504c Purchased power would have cost	24,607.56
Loss due to steam plant operation, 1920,	$42,841.60

1921.

Steam plant output 407,935 kw. hrs., net cost,	$37,880.10
Average cost of purchased power was 3.017c Purchased power would have cost	12,307.40
Loss due to steam plant operation, 1921,	$25,572.70

1922.

Steam Plant output 290,862 kw. hrs., net cost,	$12,021.87
Average cost of purchased power was 3.250c Purchased power would have cost	9,453.02
Loss due to Steam Plant operation, 1922, (4 months),	2,568.85

Total loss since Steam Plant started,	1920	$42,841.60
	1921	25,572.70
	1922	2,568.85
Loss, in 28 months,		$70,983.15
Average per year lost,		$30,421.35

The actual loss is greater than this because the Steam Plant costs do not include amortization, taxes, interest on alleged investment, etc., nor are "overheads" of production included. On the other hand—*purchased power costs include every element of cost of production.*

The average loss per year shown by the Steam Plant, if capitalized at 6 per cent. represents a fund of $507,022.50. In other words, so far, it would have to be endowed with a fund of this amount to render its operation feasible from a financial standpoint.

EXHIBIT P—16

MILLVILLE ELECTRIC LIGHT COMPANY

VALUATION AND RATE CASE

ELECTRIC POWER USED AND WATER PUMPED IN PUMPING PLANT AT HYDRO-ELECTRIC STATION

(NOTE: POWER USED STATED TO BE ELECTRIC AND HYDRAULIC)

Year	Water Pumped (Del. to Mains) in Thousand Gallons	Kilo-watt Hrs. Used	Cost in Dollars
1917	563,395	428,943	9,381.68
1918	611,782	140,791	4,331.99
1919	636,463	102,064	3,382.80
1920	653,783	487,554	12,651.29
1921	478,757	674,829	33,690.86

EXHIBIT P—17

MILLVILLE ELECTRIC LIGHT COMPANY

VALUATION AND RATE CASE

ENERGY RECORD, 1917 TO 1922 (INC.)

(UNLESS OTHERWISE INDICATED, QUANTITIES ARE IN KW. HRS.)

1917.

Source	Hydro-Plant	Purchased	Steam Plant	Total
Total generated,	361,040		Not in	
Used in plant,	13,800*		Operation	
Output available	347,240	1,005,431		1,352,671
% output used in plant,	3.98			
Apportionment sold,	309,050	895,500		
ditto in %	25.8	74.2		
Other "used by company,"				(*)
Unaccounted for				148,121
Ditto in %, (of power sold),				12.3

1918.

Total generated,	386,893		Not in	
Used in plant	11,592*		Operation	
Output available,	375,301	810,669		1,185,970
% output used in plant,	3.09			
Apportionment sold,	355,090	766,380		**1,121,470
ditto in %,	31.7	68.3		100.0
Other "used by company,"				(*)
Unaccounted for,				64,469
ditto in %,				5.75

*For above years the entire amount of power reported as "used by Company" has been charged against Hydro-Electric plant as there is no information as to the amount used in offices, etc., if any.
**Amount reported as sold is actually 1,121,474. Amount above is sum of "Apportionment sold" for all sources.

1919.

Total generated,	521,943		Not in Operation	
Used in plant,	15,452*			
Output available,	506,491	790,910		1,297,401
% output used in plant,	3.05			
Apportionment sold,	447,150	699,510		**1,146,660
ditto in %,	39.1	60.9		100.0
Other "used by company,"				(*)
Unaccounted for,				150,735
ditto in %, of power sold,				13.15

1920.

Total generated,	515,463		1,126,730	
Used in plant,	12,319		144,000	
Output available,	503,144	743,600	982,730	2,229,474
% output used in plant,	2.45		14.66	
Apportionment sold,	439,955	650,214	859,311	1,949,480
ditto in %,	22.6	33.4	44.0	100.0
Other "Used by company,"				2,696
Unaccounted for,				277,298
ditto in %,				14.25

*See first note at foot of page 1.

**Amount reported as sold is actually 1,146,666. Amount above is sum of "apportionment sold" for all sources.

1921.

Total generated,	533,995		657,200	
Used in plant,	10,836		249,265	
Output available,	523,159	867,660	407,935	1,798,754
% output used in plant,	2.07	61.1	61.1	
Apportionment sold,	441,524	732,268	344,280	**1,518,072
ditto in %,	29.1	48.2	22.7	100.0
Other "used by company,"				2,571
Unaccounted for,				278,111
ditto in % of sold,				18.3

1922—First four months.

Total generated,	198,523		428,600	
Used in plant,	3,612‡		137,738	
Output available,	194,911	67,840	290,862	553,613
% output used in plant,	1.86		47.31	
Apportionment sold,	146,500	51,230	218,800	***416,530
ditto in %,	35.2	12.2	52.6	100.0

Other "Used by company,"	4,060
Unaccounted for,	133,023
ditto in % of sold,	31.9

**Actual sold, as reported—1,518,071.5 k. w. hrs., see page 34, line 13, 1921—Report of M. E. L. Co. (on page 22, line 9, same Report "total sales given as 1,516,281.5 k. w. hrs." Larger figure was used in getting unit costs. See EXHIBIT No. P-12, pages 18 and 19.)

***Actual sold, as reported, first 4 months 1922, 416,527.1 k. w. hrs.

‡This figure approximated from 1921, actual k. w. hrs. used in Hydro-Plant not available at time of inspections by Engineers of Utility Commission and City of Millville, in June, 1922.

EXHIBIT P—18

MILLVILLE ELECTRIC LIGHT COMPANY

VALUATION AND RATE CASE

AVERAGE COST OF POWER FROM EACH SOURCE, 1917 TO 1922 (4 MONTHS)

HYDRO-ELECTRIC PLANT.

Year	Generated	Plant Output Available KW. HRS.	Apportionment Sold, KW. HRS.	Net Total Cost in Dollars
1917	361,040	347,240	309,050	$4,217.47
1918	386,893	375,301	355,090	5,433.09
1919	521,943	506,491	447,150	6,252.40
1920	515,463	503,144	439.955	8,426.76
1921	533,995	523,159	441,524	7,498.02
1922 (4 mo.)	198,532	194,911	146,500	2,668.37
	2,517,857	2,450,246	2,139,269	$34,496.11

Average cost of output, 1.406c kw. hr.
Average cost on basis of apportionment sold, 1.612c kw. hr.

PURCHASED POWER FROM MILLVILLE MFG. CO.

1917	1,005,431	895,500	$18.027.01
1918	810,669	766,380	16,404 38
1919	790,910	699,510	15,968.20
1920	743,600	650,214	18,624.60
1921	867,660	732,268	26,179.80
1922-4 mos.	67,840	51,230	2,085.20
	4,286,110	3,795,102	$97,289.19

Average cost of output, 2.270c kw. hr.
Average cost based on apportionment sold, 2.561c kw. hr.

STEAM PLANT

1916, 1917, 1918, 1919	Under construction these four years, no output until the year 1920.			
1920	1,126,730	982,730	859,311	$67,449.16
1921	657,200	407,935	344,280	37,880.10
1922 (4 mo.)	428,600	290,862	218,800	12,021.87
	2,212,530	1,681,527	1,422,391	$117,351.13

Average cost of output, 6.980c kw. hr.
Average cost based on apportionment sold, 8.251c kw. hr.

AVERAGE ANNUAL OUTPUT FROM SOURCES

Hydro-Electric Plant from 1917 to 1922-4 mos., 5 1-3 yrs., 459,420 kw. hrs.
Purchased Power, same period, 5 1-3 yrs., 803,650 kw. hrs.
Steam Plant from 1920 to 1922-4 mos., 2 1-3 yrs., 720,660 kw. hrs.

EXHIBIT P—19

MILLVILLE ELECTRIC LIGHT COMPANY

VALUATION AND RATE CASE

POWER TO WATER COMPANY'S PUMPS, HYDRO-ELECTRIC PLANT

These pumps are located in the northerly wing of the main building of the Millville Electric Light Company's Hydro-Electric plant as shown in the photographs presented as Exhibits by the Plaintiff.

Their power consumption has been determined by estimate although there have been available on the plant switchboard, instruments for measuring it for many years past.

A letter from S. J. Franklin, General Manager of the Millville Electric Light Company, to Colonel Betts, under date of October 19, 1922, sets forth that certain additional amounts of power, beyond such amounts as previously were charged, have been used by the electrically driven pumps, according to estimates of their engineers. These additions apply to both 1921 and 1922, first seven months.

An analysis of the performance of the electric pumps is given below, for the nine months, January to September, inc., of 1922.

WATER PUMPED, POWER CONSUMED, AND COST

1922 Month	Gallons Pumped*	Power Consumed, Kw. hrs.*		Dollars Cost
Jan.	9,290,000			
Feb.	12,681,833			
Mar.	2,456,500	Original Amount Charged		
Apr.	8,639,500	January to		
May.	30,859,496	July, inc.,	190,121	$10,474.16
June.	35,828,000	Added by Mr.		
July.	36,428,900	Franklin's letter,	169,343	* 9,313.86
		Total 7 mos.,	359,464	$19,788.02
Aug.	33,858,342		66,286	3,648.23
Sept.	34,355,376		71,420	3,930.60
9 mos., Totals,	204,397,947 Gal.		497,170	$27,366.85

(*) Details supplied by M. E. L. Co. by request.

Calling the pumpage for the nine months, 204,398 M. gallons, the efficiency is as follows, (Average head is 60 to 40 pounds or 115.2 feet).

Work done by the pumps in foot-pounds is,

$$204{,}398{,}000 \times 8.333 \times 115.2 = 196{,}221{,}118{,}400 \text{ foot-pounds.}$$

Energy supplied to motors, (One kilo-watt-hour equals 2,655,000 foot-pounds).

$$497{,}170 \text{ kw. hrs.} \times 2{,}655{,}000 = 1{,}319{,}986{,}350{,}000 \text{ foot-pounds.}$$

Efficiency of the pumping operation is therefore,

$$\text{RATIO,} \quad \frac{\text{Output of pumps in foot-pounds}}{\text{Input to Motors in foot-pounds}}$$

$$\text{OR,} \quad \frac{196{,}221{,}118{,}400}{1{,}319{,}986{,}350{,}000} = .1490 \text{ or } 14.9 \text{ per cent.}$$

The kilo-watt-hours per million gallons are,

$$\frac{497{,}170}{204{,}398} = 2{,}425$$

Dollars per million gallons,

$$\frac{\$27{,}366.85}{204{,}398} = \$133.60$$

EXHIBIT P—20

MILLVILLE ELECTRIC LIGHT COMPANY

VALUATION AND RATE CASE

MISCELLANEOUS DATA

EXPENDITURES AT STEAM PLANT UNDER MAINTENANCE AND CAPITAL ACCOUNTS SINCE IT BEGAN OPERATION

Maintenance

Acct. No.	ITEM All Repairs	1920	YEARS 1921	1922	TOTAL
411	Station Buildings,	$38.50	$544.58	$24.08	$607.16
412	Steam Equipment, Engine,		10,245.90	1,272.13	11,518.03
		2,061.20			2,061.20
412	Steam Equipment, Other,		7,420.89	1,788.70	9,209.59
			Total 412		$22,788.82
415	Electric Equipment,	210.19	192.45	4.87	407.51
416	Miscellaneous	2.25		29.00	31.25
	Totals,	$2,312.14	$18,403.82	$3,118.78	$23,834.74

ADDITIONS, CAPITAL ACCOUNTS, 1920 & 1921

Acct. No.	ITEMS	AMOUNTS	
101	Land,		$2,500.00
109	Extension of lighting,		41.88
110	Boiler feed pump,	$800.00	
	Stoker grate, (one boiler),	1,183.00	
	Baffel plates, boilers,	1,000.00	
	Fuel Saving Device,	4,000.00	
	Steam Meter,	336.00	
		$7,319.00	
	Less Credit,	43.32	7,275.68
111	Steam Indicator and material,	198.88	
	Oil Pump,	52.72	
	Pipe for cooling pond,	418.24	669.84
115	Motor Generator Set,		2,340.10
116	Voltage Regulator, etc.,	533.33	
	Switchboard panel, etc.,	671.99	1,105.32
117	Coal Conveyor,		812.72
	Total additions under capital accts.,		$14,745.54

STATION LOG SHEET FOR 24 HOURS

November 22, 1922.	Wattmeter Readings (K.W.)		December 21, 1922.	Wattmeter Readings (K.W.)	
Time A. M.	Steam	Hydro	Time A.M.	Hydro	Bleachery (M. Mfg. Co.)
6	210	70	6	55	175
7	150	80	7	65	150
8	160	75	8	65	180
9	150	75	9	60	180
10	150	75	10	60	175
11	150	75	11		235
12 (noon)	90	75	12 (noon)		225
P. M.			P. M.		
1	150	75	1		225
2	170	75	2		250
3	200	75	3		250
4	140	80	4	55	200
5	380	65	5	70	325
6	380	70	6	75	350
7	400	70	7	75	355
8	380	65	8	70	355
9	320	65	9	70	345
10	280	65	10	70	325
11	220	65	11	70	200
12(midn't)	190	70	12(midn't)	65	160
November 23, 1922.			December 22, 1922		
A. M.			A. M.		
1	150	65	1	55	135
2	150	65	2	55	125
3	150	60	3	55	125
4	140	60	4	55	125
5	140	60	5	55	125

Total generated, above 24 hours, Steam Plant, 5,000 kw. hrs.
Used in plant, condenser, 710 kw. hrs.
m. g. exc., 540 kw. hrs.
lighting, etc., 55 kw. hrs.

1,305 kw. hrs.
Hydro-plant, 1,910 kw. hrs.
Used in plant, lighting, etc., 35 kw. hrs.
Total power from M. Mfg. Co. in above 24 hrs., 5,100 kw. hrs.
Total generated, Hydro-plant, 850 kw. hrs.
Station lighting, etc., 41 kw. hrs.

COST OF COMMERCIAL POWER TO PUBLIC CONSUMERS

1921

Total Sales, Commercial Power,
847,651 kw. hrs., for $47,161.91@5.57c kw. hr.
Power for pumps (original),
672,829 kw. hrs. chg., 33,690.86@4.99c kw. hr.
Sales to Public Consumers,
172,822 kw. hrs. chg., 13,471.05@7.80c kw. hr.

1922 (9 MONTHS) (REVISED QUANTITIES GIVEN)

Total sales, Commercial power,
649,031 kw. hrs. chg., $39,407.47@6.08c kw. hr.
Power to pumps, 497,170 kw. hrs. chg., 27,366.85@5.49c kw. hr.
Sales to Public Consumers,
151,861 kw. hrs. chg., $12,040.62@7.93c kw. hr.

BILLS ARE PAYABLE AT THE COMPANY'S OFFICE

Oct. 1st, 1921

Delinquent, { Metered, - - $.....
Unmetered, ...

Unmetered, - - .....

Metered, - - - .....

TOTAL, -

Form E—503 NO. 233 HIGH STREET

PROMPT PAYMENT IS A CONDITION OF SUPPLY

Millville, N. J., Oct. 1st, 1921

To Millville Electric Light Co., Dr.

For Electric Light furnished during Sept. as follows:

DELINQUENT.....

State of Meter Sept.....1921 ..... 00.....

Previous State Aug.....1921 ..... 00.....

Consumption .....00..... .....

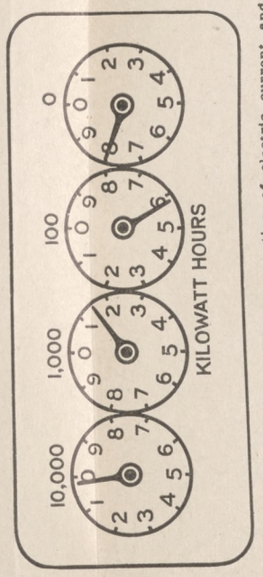
Discount if paid on or before Oct. 10.....

Detach stub and send with check. Your cancelled check is a receipt.
If a receipt is required a stamped envelope must accompany bill.

TOTAL,

FAILURE TO RECEIVE BILLS DOES NOT ENTITLE YOU TO THE DISCOUNT

How to Read the Index of an Electric Meter



The four dials record the consumption of electric current and each complete revolution of their index hands, beginning at the right denotes to kilowatt hours; 1,000 kilowatt hours; 100 kilowatt hours and 10,000 kilowatt hours, respectively.

Each subdivision of the circle at the right indicates 1 kilowatt, or 1,000 watts and when its index hand has traveled over 10 of these sub-divisions and 10 kilowatts have been consumed through the meter it will come back to zero again and the index hand in the next circle to the left will have moved forward one sub-division indicating 10 kilowatts.

When anyone of these index hands has made one complete revolution the hand in the circle on its left will move forward one sub-division. The hands do not all move in the same direction. Beginning at the right in the above cut the first and third hands move to the right like the hands of a watch, and the second and fourth hands move to the left.

If an index hand be between two figures, the lesser one must always be taken, and if it is so near a figure that seems to indicate it exactly look at the next circle to the right and if the index hand in that circle has passed zero then the higher figure should be taken.

FOR EXAMPLE.

To read the meter dial in the above cut, look at the circle at the right and set down "8" the figure over which the index hand stands; look at the next circle to the left and set down "5," the lesser of the two numbers between which "1" the index hand stands; look at the next circle and set down "0," making a total of "158." then look at the next circle and set down "1" and last of all look at the circle on the left and set down "0," making a total of "158." This will show you that the meter reading is 158 KW., or kilowatts as known in electric parlance, and is the correct reading of the meter dial.

The company charges you by the kilowatt the same as the consumer regarding the meter reads.

We shall be pleased to at any time instruct the consumer regarding the meter reads.

MILLVILLE ELECTRIC LIGHT COMPANY,
By S. J. FRANKLIN, Supt.

EXHIBIT P—21

MILLVILLE ELECTRIC LIGHT COMPANY

VALUATION AND RATE CASE

OFFICERS OF COMPANIES AT NO. 233 N. HIGH STREET MILLVILLE, N. J.

COMPANIES INVOLVED:	*REPRESENTED BELOW AS:*
Millville Electric Light Company,	Electric
Cumberland County Gas Company,	Gas
The Millville Water Company,	Water
High Pressure Construction and Supply Company,	H. Press.

Office of President

Year	Electric	Gas	Water	H. Press.
1917		W. C. Buell	Francis Reeves	
1918	W. C. Buell	W. R. Goodwin	S. J. Franklin	
1919	" "	" "	" "	
1920	" "	" "	" "	
1921	" "	" "	" "	Walter Wood " "

Office of Vice President

1917		S. J. Franklin	W. R. Goodwin	
1918	C. C. Reeves	" "		
1919	" "	" "		
1920	Walter Wood	" "	Walter Wood	
1921	" "	" "	" "	

Office of Secretary

1917	Walter Owen	C. M. Nixon	Walter Owen	
1918	C. M. Nixon	" "	C. M. Nixon	
1919	" "	" "	" "	
1920	" "	" "	" "	
1921	" "	" "	" "	Walter Owen " "

Office of Treasurer

1917	Walter Wood	Walter Wood	Walter Wood	
1918	" "	" "	" "	
1919	" "	" "	" "	
1920	" "	" "	" "	
1921	" "	" "	" "	Walter Wood " "

General Manager

1917	S. J. Franklin	S. J. Franklin	S. J. Franklin	
1918	" "	" "	" "	
1919	" "	" "	" "	
1920	" "	" "	" "	
1921	" "	" "	" "	S. J. Franklin " "

Information from the New Jersey DEPARTMENT OF STATE shows that the High Pressure Construction and Supply Company was incorporated in New Jersey June 7, 1920, by S. J. Franklin, Walter Owen, and Alfred Brandriff, Jr., all of Millville. Three reports to the Secretary of State filed by this Company on dates, January 22, 1913; November 16, 1914; and May 15, 1919, all show as officers: President, Walter Wood; Treasurer, Walter Wood; Secretary, Walter Owen.

THE REPUBLICAN PUBLISHING COMPANY was incorporated March 31, 1911, by S. J. Franklin; B. Frank Buck, and Walter Owen. Reports filed May 7, 1914, and September 13, 1916, both give as officers, President, S. J. Franklin; Treasurer, Walter Owen; Secretary, B. Frank Buck. The same officers are shown for 1920 and 1921 by records in the State Board of Taxes and Assessment. The Republican Publishing Company publishes The Millville Daily Republican. The address of all the officers is No. 233 High Street, Millville, N. J.

Electric Light Consumers
TAKE NOTICE

The Millville Electric Light Company petitioned the State Public Utility Commission last November for the following rates (as shown below) to cover increases of cost in the production and distribution of electric current.

The Commission suspended their adoption (or secured our promise to do so) of the rates for three months. This time having elapsed, the rates will now be put in force from the dates of the meter readings on the last of February.

So that all customers shall be treated with entire fairness, and not suffer any loss from the suspension of the Public Utility Commission, by the late action of the Governor, the Electric Light Company will, upon the payment of all bills, give the customer a receipt, guaranteeing to abide by the decision of the new Board, and if such calls for a rebate upon the payments already made, the Company will, upon the presentation of said receipt, promptly make any refund such decision shall call for or require.

We consider this proposition fair and reasonable to all interested parties

LIGHTING RATES

SCHEDULE-A.

Residential, Office, Professional and Club Lighting—All year, monthly basis.

For first 30KW. or less, 19c per KW. Discount, 3c per KW. Net 16c per KW.
All over 30 KW., 17c per KW. Discount, 3c per KW. Net 14c per KW.

Minimum Charge, $1.10 gross, Net $1.00 per month.

SCHEDULE-B.

Store, Mercantile and Church Lighting—All year, monthly basis.

For first 100 KW. or less, 15c per KW. Discount 1c per KW. Net 14c per KW.
All over 100 and up to 500 KW., 14½c per KW. Discount 1c per KW. Net 13½c per KW.
All over 500 KW., 14c per KW. Discount, 1c per KW. Net 13c per KW.

Minimum Charge, $1.10 gross, Net, $1.00 per month.

SCHEDULE-C.

Transient Lighting—monthly basis.

20c per KW. Discount, 2c per KW. Net 18c per KW.

Minimum Charge, $2.20 gross, Net $2.00 per month.

SCHEDULE-D.

Sign Lighting—monthly basis.

12c per KW. Discount 2c per KW. Net 10c per KW.

Minimum Charge, $1.10 gross, Net $1.00 per month.

SCHEDULE-E.

Industrial Lighting—monthly basis.

When Industrial lighting is used in connection with electric power under Schedule AP, the lighting rate will be one and one-half times the average power rate for the same month.

POWER RATES
Monthly Basis

SCHEDULE-AP.

FOR	the	first	250	K. W.	.10	per	K. W.
"	"	next	250	"	.09	"	"
"	"	"	1000	"	.08	"	"
"	"	"	1500	"	.07	"	"
"	"	"	2000	"	.06	"	"
"	"	"	5000	"	.055	"	"
"	"	"	5000	"	.05	"	"
"	"	"	5000	"	.045	"	"

For all current over 20,000 KW. hours per month, the net charge will be .055 per KW.

A minimum charge of one ($1.00) dollar per month, per horsepower of connected load will be made for Fifty (50) Horsepower or less. For all connected load over 50 Horsepower a minimum charge of fifty (50c) cents per month, per horsepower will be made; provided that that amount of current is not registered on the meter.

2-21-7t.

Millville Electric Light Co.

EXHIBIT P—22

MILLVILLE ELECTRIC LIGHT COMPANY

VALUATION AND RATE CASE

MISCELLANEOUS ACCOUNTS AND INTEREST RECORD, 1915 TO 1922, INC.

Year	Account 207 Bills (Notes) Payable	Account 210 Other Accounts Payable	Account 151 Construction Wk. in Progress	High Pressure Construction Co. Bills	Interest Charged, Account 512
1915	$3,150.00	$13,091.28		$15,111.78	$909.09
1916	67,000.00	50,514.26	$99,945.30	85,254.27	812.85
1917	146,100.00	17,366.96	134,034.25	34,091.88	7,008.56
		(Incr.	34,088.95)		
1918	215,131.91	7,980.80	167,786.00	33,751.75	11,560.46
		(Incr.	33,751.75)		
1919	228,056.05	15,143.40	200,484.67	32,703.29	12,533.86
		(Incr.	32,698.67)		
1920	243,767.26	70,398.84		Exact information not in hand.	14,716.11
1921	277,399.52	53,922.01		ditto	16,740.74
1922	(9 mo.)			ditto	14,461.70

Total Interest Charges, $78,743.37

Based on the months of July, August, and September, 1922, the interest charges for the balance of the present year, 1922, will be in excess of 5,100.00

This would give a total for Interest Deductions for above period of $83,843.37

Miscellaneous and Overhead Expenses of the Gas, Water and Electric Companies, which are under one management, (along with the High Pressure Construction and Supply Company), at 233 High Street, Millville, N. J., for the year 1921:

	General Officer's Salaries	General Office Clerks	General Law Expense	Miscellaneous General Expense	Totals
Gas,	$3,743.77	$4,564.24	$1,416.53	$2,116.09	$11,840.63
Water,	5,219.70		1,945.07	502.42	7,667.19
Electric,	3,223.08	3,176.66	1,598.21	944.27	8,942.22
Totals,	$12,186.55	$7,740.90	$4,959.81	$3,562.78	$28,450.04

MILLVILLE ELECTRIC LIGHT COMPANY
233 HIGH STREET

MILLVILLE, NEW JERSEY
February 23rd, 1921.

A. N. Barber, Secretary,
Board of Public Utility Commissioners,
Trenton, New Jersey.

Dear Sir:—

As the Millville Electric Light Company has been losing money during the whole year of 1920, and in very large amounts since June, being around $8,000 per month, until December, which was over $4,500 loss, and as there is no Public Utility Commission functioning and also owing to the fact that the time since our application for rates was suspended has expired, we have concluded upon legal advice, to protect ourselves from greater losses, by putting the following attached schedule for Lighting and Power, into effect, from the time of reading the meters on the last of February, 1921.

You will also please note that we explain in this notice that we propose to give a rebate coupon to each consumer paying their bill, so that providing our rates, as finally agreed upon, is considered exorbitant, it is so arranged that they will receive a refund according to the direction of a new Utility Commission, when it is functioning.

And with these explanations, we desire to place this rate on file in your office.

Very truly yours,
MILLVILLE ELECTRIC LIGHT COMPANY,
BY: S. J. FRANKLIN,
General Manager.

SJF:RQ

MILLVILLE ELECTRIC LIGHT COMPANY

VALUATION & RATE CASE. (Sheet "E.")

LAND & BUILDING LOCATIONS.

Exhibit No. P. 23

Scale,- 1" = 50'. (Except for Grand Stand at N.E. Cor. ATHLETIC FIELD TRACT, which is sketched in and shows approx. size & location.)

STEAM PLANT TRACT,- ⑦⑧⑨⑩⑪⑫⑬,
Ellison Elmer to Millville Electric Light Co.,
May 24th, 1916, B. 348-P. 505

ATHLETIC FIELD TRACT,- ⑨⑩⑪⑭ ⑮ ⑯,
Ellison Elmer to Millville Electric Light Company
June 8, 1920, B. 583-P. 483.

Cypress Street.

Harrison Street

Second Street

Sharp Street

Water from Union Lake.

Canal Bridge

To M. Mfg Co.

Elmer Street

Water Co. Pumps & Equipment

Water Co. Equipment

Water Co. Equipment

Life-line from Water-Wheels to

Maurice River.

HYDRO-ELECTRIC & WATER PLANT.

Wagon Road.

GAS COMPANY'S TRACT
3 ½ Acres.

N. 2° 10' E.

N. 87° 50' W.
381.25'

S. 19° 20' W.

Steam Plant
(Engine Room) (Boiler Room.)

Auto Shed. (Not there when photo. was taken.)

2.37 Acres

342'

These Lots not included in M.E.L. Co's Property.

47'

110'

110' Wire Fence

Ticket Window

48'

145'±

150.6'

Grand Stand.

Spray Pond.

400'±

West Jersey & Seashore Railroad Company.

ATHLETIC FIELD
1.57 Acres, Plus ⑨⑩⑪⑰

High Board Fence

343'

309'

169'

High Board Fence

Oil Company

Oil Company

TRACT #1. (①②③④) Millville Manufacturing Co. to Millville Water Co., Dec 28, 1878, B. 155-P. 106; & M.W. Co. to Millville Electric Light Co., Dec 22, 1915, B. 346-P. 434.

TRACT #2. (③④⑤⑥) M. Mfg. Co. to M.E.L. Co., Jan. 27, 1892, B. 210-P. 427.

IN CHANCERY OF NEW JERSEY

Between:

City of Millville,
Complainant,
and
Millville Electric
Light Company,
Defendant.

On Bill for Injunction.
Hearing at return of order to show cause.
MEMORANDUM.

LOUIS H. MILLER, Esq., for complainant.
HON. LEWIS STARR, for defendant.

LEAMING, V. C:

I am unable to discern any existing necessity for this court to intervene at this time in the matter of rates of the Millville Electric Light Company.

Subdivision (h) of Section 16 of the Public Utility Act (Sum. to Comp. Stat. p. 1280) expressly empowers the Board of Public Utility Commissioners to order the suspension of proposed increased rates for a period of three months pending hearing touching the reasonableness of such proposed increased rates. Accordingly it is clearly within the power of the present board to suspend the schedule of proposed increased rates filed by defendant February 23, 1921, should it determine to do so.

Under these circumstances there appears to be no necessity for the intervention of this court at this time to afford by its process of injunction the very relief which can be afforded by a statutory tribunal

created for the specific purpose and now fully equipped to afford.

I will advise an order dismissing the order to show cause.

Submitted: March 21, 1921.

Determined: March 31, 1921.

MILLVILLE ELECTRIC LIGHT COMPANY VALUATION AND RATE CASE.

MAP SHOWING PLANT LOCATIONS. EXHIBIT # P 24

Approx. Scale, 1" 935'

A = Site of Hydro-Electric & Water Plant.

B = Site of Steam Plant

C = Stand-Pipe to which water is Pumped

D = Athletic Field.

E = Canal.

MAP OF MILLVILLE, N. J.

1920

SCALE 1 INCH = 300 FEET

KEY

+ FIRE STATIONS
● FIRE ALARM BOXES
SCHOOLS
CHURCHES
BANKS
——·——WARD LINES

Edward S. Busby

IN CHANCERY OF NEW JERSEY

Between:

City of Millville,

Complainant,

and

Millville Electric
Light Company,

Defendant.

CONCLUSIONS.

LEAMING, V. C.

LOUIS H. MILLER
COUNSELLOR-AT-LAW
Special Master in Chancery
Supreme Court Commissioner
MILLVILLE, N. J.
Bell Telephone 38

Alfred N. Barber,
Secretary Board
Public Utility Commissioners,
State House, Trenton,
New Jersey.

April 2 1921.

Rates Millville Electric Co.

Dear Sir:

I beg to acknowledge receipt of your letter dated April 1, 1921, notifying me that the Board has declined to suspend the increased schedule of rates filed with your Board on or about February 24th. I have executed what directions were given to me by the governing body of the city of Millville with respect to the attempt to put into operation the increased schedule of rates.

I will submit to them at their next meeting the opinion of the Vice Chancellor, copy of my telegram to your Board and also a copy of the letter sent by your Board to me. If the Board of Commissioners of Millville desire me to take any further proceedings before the Board of Public Utility Commissioners of course I will be very glad to take their instructions.

Yours very truly,
LOUIS H. MILLER,
City Solicitor of Millville.

EXHIBIT P—30

SALARY ACCOUNT OF OFFICERS AND OFFICE HELP, ETC., APPORTIONED TO VARIOUS COMPANIES.

1919

	Total	Gas	Water	Electric	H P C & S
S. J. Franklin	$3,000.00	$1,080.00	$840.00	$1,080.00	
W. Wood	999.99	999.99			
W. C. Buell	2,124.99	444.99	420.00	600.00	660.00
G. L. DeHuff	2,002.50	990.00	300.00	600.00	112.50
W. Owen	1,642.50	750.00	412.50	480.00	
T. M. Carroll	1,147.50	510.00	240.00	360.00	37.50
S. J. Hall	1,095.00		510.00	510.00	75.00
G. D. Hay	1,080.00	540.00	240.00	300.00	
W. H. Stewart	975.00	120.00	300.00	60.00	495.00
M. W. Querns,	1,024.95	420.00	180.00	300.00	124.95
L. H. Burge,	997.50	485.00			512.50
J. D. Novario	234.00	106.00	48.00	79.00	
W. P. Adams	1,186.02	656.07	112.50	95.67	312.78
W. J. White	1,132.21	1,110.11			23.10
R. Querns,	411.40	205.70	102.85	102.85	
Miss Lane	24.56	24.56			
M. DiCiurcio	638.95	526.94			107.01
S. Marsh	600.45	600.45			
E. Vannaman	811.31	438.91	124.09	124.09	124.22
G. Greene	945.83	768.73	88.55	44.28	44.27
M. Russell	907.95	907.95			
M. Tuller	790.02	790.02			
A. Stanger	772.76	772.76			
Mrs. Taylor	305.14	241.78	31.90	31.46	
M. White	766.50	316.50	157.50	31.50	259.00
V. Hall	136.19	136.19			
M. Knowles	378.05	378.05			
M. Corson	338.15	299.27	19.44	2.14	17.50
A. Reifsnyder	711.01	711.01			
	$27,176.43	$15,332.98	$4,128.33	$4,800.99	$2,914.13

1920

S. J. Franklin	$4,333.44	$1,830.06	$840.00	$1,683.38	
W. Wood	1,383.38	1,000.00		583.38	
W. C. Buell,	2,400.00	480.00	480.00	660.00	780.00
G. L. DeHuff	2,100.00	1,050.00	315.00	615.00	120.00
W. Owen	1,600.00	840.00	435.00	525.00	
T. M. Carroll	1,299.96	588.00	264.00	396.00	51.96
S. J. Hall	1,200.00		555.00	555.00	90.00
G. D. Hay	1,200.00	600.00	264.00	336.00	
W. H. Stewart	1,092.00	144.00	338.00	72.00	540.00

	M. W. Querns,	1,320.00	600.00	216.00	360.00	144.00
	L. H. Burge	1,080.00	522.00			558.00
	T. Bedwell	1,668.39			1,668.39	
	W. P. Adams	1,207.85				1,207.85
	R. Querns	1,207.85	603.92	301.96	301.97	
	W. J. White	1,308.33	1,276.93			31.40
	M. DiCiurcio	180.10	144.62			35.48
	S. Marsh	225.03	225.03			
	E. Vannaman	8.07	4.62	1.15	1.15	1.15
	G. Greene	737.33	524.65	106.33	53.18	53.17
	M. Russell	874.97	874.97			
	M. Tuller	852.54	852.54			
	A. Stanger	1,006.38	1,006.38			
10	M. White	890.75	313.25	157.50	17.80	402.50
	M. Knowles	785.00	689.50	38.50	38.50	38.50
	M. Corson	677.98	481.93	98.03		93.02
	A. Reifsnyder	76.81	76.81			
	G. Nixon	85.42	85.42			
	V. Husted	15.00	15.00			
		$31,216.58	$14,809.63	$4,408.47	$7,846.45	$4,152.03

1921

	S. J. Franklin	$5,000.16	$2,080.08	$840.00	$2,080.08	
	W. Wood	2,000.16	1,000.08		1,000.08	
	W. C. Buell	2,400.00	480.00	480.00	660.00	780.00
	G. L. DeHuff	2,100.00	1,050.00	316.00	615.00	120.00
20	W. Owen	1,800.00	840.00	435.00	525.00	
	T. M. Carroll	1,299.96	588.00	264.00	396.00	51.98
	S. J. Hall	1,200.00		555.00	565.00	90.00
	G. D. Hay	1,200.00	600.00	264.00	336.00	
	W. H. Stewart	1,092.00	144.00	336.00	72.00	540.00
	M. W. Querns	835.18	379.63	136.67	227.78	91.10
	L. H. Burge	1,080.00	522.00			558.00
	T. Bedwell	2,200.08		274.95	1,925.13	
	W. F. Adams	1,200.00				1,200.00
	W. J. White	1,299.96	1,268.76			31.20
	R. Querns	1,200.00	600.00	300.00	300.00	
	A. Stanger,	999.96	999.96			
	M. White	1,085.00	180.25			904.75
	M. Knowles	900.12	364.00	178.36	178.88	178.88
	G. Nixon	650.00	650.00			
	V. Husted	936.00	936.00			
30	C. Nixon	568.75	293.75		275.00	
		$31,047.33	$12,976.51	$4,378.98	$9,145.95	$4,545.89

June 6, 1923.

In re: Millville Electric Light Co.

Hon. Harry V. Osborne,
790 Broad St., Newark, N. J.
My dear Judge Osborne:

I have just been served with a copy of what purports to be Exhibit P-31 in this matter, and have suggested to Mr. Miller that the said exhibit is not in accordance with what I understood to be the privilege afforded him on the last day of the hearing. The record, page 536, shows that the Professor prepared a tabulated statement showing the valuation placed on the electric light plant, which was presented. He was then given the privilege to retain the original and submit a typewritten copy. Manifestly the exhibit prepared by Temple subsequently was far beyond the tables of valuation which were presented by him. The scope of the exhibit is a brief and argument, which was entirely beyond the spirit of the stipulation as I understood it. I, therefore, object to the consideration of the exhibit in the form as presented.

Furthermore, Temple was given ten days only to submit additional data. This appears on page 537 of the record. A much longer period elapsed before this exhibit was submitted.

I, therefore, feel that we should not be obliged to have the data contained in the exhibit considered by the Commissioners.

I have not had an opportunity to go over all of the matters, but it appears to me that the paper contains material which is entirely foreign to any inventory or appraisement of property.

Very truly yours,

LS|G LEWIS STARR.

STATE OF NEW JERSEY
BOARD OF
PUBLIC UTILITY COMMISSIONERS
NEWARK

June 8th, 1923.

Hon. Louis Starr,
Market & Fourth Streets,
Camden, New Jersey.

RE: MILLVILLE ELECTRIC LIGHT CO.

My dear Judge Starr:

I am in receipt of an unsigned letter, dated June 6th, which I assume was written by you.

I have not yet had an opportunity to examine, in detail, the data in the exhibit submitted by Professor Temple; but it evidently contains data which should be before the Board for a proper consideration of this case. If, as you say, this exhibit is in the nature of a brief and an argument, or a part of same partakes of such a nature, I think that the Board may be depended upon to give proper weight to any statements appearing therein, which do not have a proper place in such an exhibit, or in the testimony which might be given in reference to same.

Unless you wish to waive objection to the exhibit as presented, it will be necessary to call another hearing in the matter, at which time objection may be made to such parts, or all of the data submitted, as you may consider improper.

In reference to the time specified in which additional data should be filed, Professor Temple has certainly been dilatory in complying with this requirement, but this does not seem sufficient in itself to warrant the rejection of this exhibit; especially as his delay has not, in any way, prejudiced the case of the company.

Very truly yours,
H. V. OSBORNE,
H. E. C.
President.

Dictated but not
signed by Mr. Osborne.

STATE OF NEW JERSEY
BOARD OF
PUBLIC UTILITY COMMISSIONERS
NEWARK

June 15, 1923.

Hon. Lewis Starr,
Law Building,
Camden, New Jersey.

RE: MILLVILLE ELECTRIC CO. RATE CASE

My dear Judge Starr:

Not having heard from you in reply to my letter of the 7th instant, in reference to Exhibit P-31, submitted by Professor Temple in that case: I assume you do not wish to press your objection to the additional data filed by Professor Temple.

However, upon examining same, we find that a part of it is argumentative; and we will consider that part of the Exhibit only, which is filed in accordance with the stipulation or understanding reached in the last hearing, as indicated on Pages 437 and following in the record, and on pages 535 to 537.

Very truly yours,

H. V. OSBORNE,
President.

June 21, 1923.

Hon. Harry V. Osborne,
Kinney Building,
Trenton, N. J.

My dear Judge Osborne:

On the day I returned from Atlantic City I found a letter from Mr. Franklin, intimating that the Electric Light Company did not desire to let Temple's brief stand without another hearing, with an opportunity to refute the statements contained therein. I immediately sent him your letter, stating that the Commission would not consider that portion of the exhibit which was argumentative, and until I hear from Franklin, I do not know exactly what my clients desire done.

In the meantime, I wish you would hold the matter in abeyance so that I may have an opportunity to consult with him, and I will advise you promptly upon getting Franklin's reply.

Very truly yours,

LS-C LEWIS STARR.

June 26, 1923.

Hon. H. V. Osborne,
Kinney Building,
Newark, N. J.

In re: Millville Electric Light Co. Rate Case.

My dear Judge Osborne:

As I indicated to you last week, Mr. Franklin and myself had a conference yesterday with Mr. Martz, representing the Engineers, Day & Zimmerman, with relation to alleged exhibit No. P-31, submitted by Professor Temple.

The conclusion reached was that Professor Temple has taken advantage of the privilege afforded by the Commission to substitute a typewritten copy of the schedules of valuation presented by him at the last hearing, to prepare and submit for the consideration of the Board, an alleged exhibit which contains totally irrelevant and improper matters, which paper under no possible interpretation, can reasonably be said to exhibit a schedule and appraisement of the Electric Light Plant.

One instance in particular, of the abuse of such privilege, is the inclusion of operating expenses and the Professor's comment thereon. This, however, is only one of many attempts on the part of the Professor to interject as evidence in the cause, an argument and statement of his opinion with reference to the matters involved.

Therefore, we cannot go on record, as acquiesing without objection to the admission of the exhibit as evidence, and the suggestion made in my letter to you of June 6th, is again urged. I have no authority whatever to enter a waiver and, in fact, my client insists that formal objection be made. I thought that Mr. Miller would recognize the impropriety of the Professor's submitting the data contained in the exhibit, and so wrote him, in the

hope that he would either withdraw the same as a whole, or have it re-written, so as to cover an inventory and appraisement, only, in accordance with the stipulation. He does not take this view, but apparently insists that the document be received as an exhibit in the cause.

Furthermore, we feel this position should be taken, even if it necessitates a re-opening of the case and further hearings, which we are very anxious to avoid.

I have turned the exhibit over to the Engineers in order that they may examine the same carefully, and be able to refute or explain the statements contained therein, in case the Board concludes to permit the paper to be admitted into evidence.

We think, however, that the exhibit should be rejected as a whole, and if this be done, there will be no necessity for any further hearing. Otherwise, if the paper is admitted, we ask the Commission to fix a day for a further hearing, making the time not shorter than three weeks from date, so that the Engineers may have an opportunity to thoroughly examine the same, and be able to answer the statements contained therein.

If the Commission concludes to reject the document as an exhibit of evidential character, but allows same to be filed as a brief on behalf of the municipality, we think we should be entitled to an opportunity to have the Engineers prepare a reply thereto, which can be submitted as a counter-brief on behalf of the Utility.

Kindly let me hear from you.

Very truly yours,

LS|C LEWIS STARR.

Hon. Harry V. Osborn,
State Board Public Utility Commissoners,
Kinney Building,
Newark, N. J.

June 27 1923.

Rate Case.

Dear Judge:

Referring to the letter of Judge Starr in which he complains of Exhibit P-31 submitted by Professor Temple, I wish to say that on behalf of the City of Millville I submit to the judgment of the Board the question whether or not the document ought to be received as it stands, or whether any part of it should stand.

But I am not willing that the case be opened and if the document is improperly in then of course the Board ought exclude it. It must not be forgotten that this rate case is being carried on by the Board on its own initiative, pursuant to the order announced by Commissioner Tracy, and therefore I feel that if for any reason Professor Temple's exhibit does go out of the case, yet there is every probability that the same grounds will be covered by the experts of the Board or are already in the testimony, and I will rely on that.

I do, however, seriously object to the case being opened and urge the Board to an early determination —something that the public has been justly expecting from day to day since the case was closed.

Yours very truly,

LOUIS H. MILLER,

City Solicitor of Millville.

STATE OF NEW JERSEY
BOARD OF
PUBLIC UTILITY COMMISSIONERS
TRENTON

June 29, 1923.

Rates—Millville Elec.
Light Company.

Lewis Starr, Esq.,
Law Bldg.,
Camden, N. J.

Dear Sir:

Referring to your letter of the 21st inst. addressed to Judge Osborne, this has been given consideration by the Board and I am instructed to write to you informing you that the Board prefers to accept the document from Prof. Temple as being in the nature of an argumentative brief, and would like to have the company submit a reply.

Very truly yours,

A. N. BARBER,

B:V Secretary.

EXHIBIT P—31

MILLVILLE ELECTRIC LIGHT COMPANY

VALUATION AND RATE CASE

VALUATION OF PHYSICAL PROPERTY

Based on Prices as of January 1, 1923.

HYDRO-ELECTRIC PLANT.

For location of this plant and its relation to other sources of power supply, see Exhibits P-14, P-23, and P-24.

Acct. No. 101, LAND.	Cost New	Cost New Less accrued Depreciation
Rectangular plot 115 x 114 ft., south side of Sharp St. west from Canal of Millville Mfg. Co., contains buildings occupied by Electric Co., also buildings occupied by Millville Water Co. Value of land, ...$1,000		
Portion chargeable to Electric Co. determined by ratio of area of buildings used by each Company, as follows:		
Electric Company Buildings		
Generator Room, 2,023.5 sq. ft.		
Water Wheel Shed, 821.5 sq. ft.		
Total Electric Co., 2,845 sq. ft.		
Water Company Buildings		
Pump Room, 1,225 sq. ft.		
Filter Room, 1,700 sq. ft		
Equipment Room, (Item 8, page 7, Exhibit R-10), 840 sq. ft.		
Total, Water Company, 3,765 sq. ft.		
Summary, Totals		
Electric, 2,845 sq. ft.—43.1%		
Water, 3,765 sq. ft.—56.9%		
Total, 6,610 sq. ft.–100.0%		
Amount chargeable to Electric Co. is, therefore, $1,000×.431=$431		
Total Account 101, Hydro-Electric Plant,	$431	$431

	Cost New	Cost New Less Accrued Depreciation
NOTE: Respondent's Valuation contains an item of "Water Right" upon which a value of $20,000 is placed. The existence of this Water Right is not disputed. Neither is the value stated, *provided* the power available from the Water Right be utilized to its full extent. The records in this case show that this has never been done up to this time. See Exhibit P-18, also Annual Reports of the Respondent to the Board of Utility Commissioners. It is the claim of the Plaintiff that the value of this Water Right should not be allowed as a capital sum because its alleged value would then appear in the valuation whether the water power be utilized fully or not. It is the claim of the Plaintiff that allowance for the value of the Water Right should be made in the form of an appropriate amount per kilo-watt hour produced by the Hydro-Electric Plant and this is, therefore, treated of in this Exhibit under the head of "Operating Costs" which appears later herein.		
Acct. No. 108, DAMS, CANALS & PIPE LINES.		
Water Intake from Canal,	1,012	708
3-8 inch riveted steel flume, 60 in. diameter, forebay to water wheels, including supports in wheel shed,	3,420	1,710
NOTE: In the conferences it was agreed that the value of this item is $3420. Respondent's Exhibit No. 10 gives the value as $3670 which is not according to the value agreed upon and may be an error.		
Tail Race, at rear of water wheel shed, width approximately 15 ft., length on Company's property about 55 ft., has retaining walls portion of length.		
NOTE: Amount of excavation and masonary involved, as found by Engineers of both Plaintiff and Respondent, is the same and is taken as, excavation, 420 cu. yds.; masonry, 120 cu. yds. The costs as made up by the engineers is as follows:		

	Plaintiff's Engineer	Respondent's Engineer	Cost New	Cost New Less Accrued Depreciation
Excavation, 420 cu. yds.	@ .60 $252	@ 2.00 $840		
Masonry, 120 cu. yds.	@8.00 960	@10.00 1200		
Omissions and Contingencies,	Sub-Total	$2040		
10% of sub-total,		204		
Total	$1212	$2244		
The prices applied by the Plaintiff's Engineer as shown above, are liberal as compared with the costs of labor and material for which the work can be done based on the conditions in Millville, and the Plaintiff's value for this item is, therefore considered to be fair. The Respondent's Engineer states that the high figures set down for excavation by him is based on this being "wet excavation." The Plaintiff's Engineer claims the water would not be turned in on this tail race until it was completed and sees no reason why this should be regarded as "wet excavation."			1,212	727
Total Acct. No. 108,			$5,644	$3,145
Acct. No. 109, POWER PLANT BUILDINGS.				
NOTE: To avoid repetition the descriptions below are abbreviated. To avoid confusion references are made, for each item, to the corresponding items, by number, as they are listed on pages 5, 6, and 7, in Respondent's Exhibit R-10. Photographs showing the condition and character of these buildings are shown in Exhibits P-3 to P-6, inc. also P-26 and P-27.				
Generator and Switchboard etc. Room, one story brick, temporary sheathing in front wall where generator was taken in some years ago. (Resp. Item No. 1) Ground area, 2,023.5 sq. ft.			$4,450	$2,225
Shed over water wheels, brick one end and board sides. (Resp. item No. 2). Ground area, 821.5 sq. ft.			961	481
Building containing heating boiler and other old equipment, latter apparently not used. This appears to be				

	Cost New	Cost New Less Accrued Depreciation
merely a passage way between adjacent buildings which has been roofed over. (Resp. Item No. 4). Replacement cost new, $636.00		
Since it houses the heating boiler for both the Water and Electric Companies its value to the Electric Co. is apportioned in same ration as was applied case of land, (See page 59.) namely 43.1% of total or,	274	137
1 heating boiler, (Name plate says "Camden Iron Works, 1886"), (Resp. Item No. 5) value new, $1800. Apportionment to Electric Co., 43.1%	776	194
Stack for above boiler, (Resp. Item No. 6). Value new, $708. 43.1% to Electric Company,	305	153
NOTE: Buildings listed by Respondent under		
Items Nos. 3, 1,225 sq. ft. pump room, 7, 1,700 sq. ft. filter room, and 8, 840 sq. ft. misc. room,		
are not considered as "Used and Useful" in connection with the business of the Electric Company and are not therefore included in this Valuation. If the Electric Co. owns these buildings and sees fit to charge a proper rental it may do so entirely aside from any considerations which need be given the matter in this case. The information is that no rental has ever been charged which would seem to prove the Plaintiff to be correct in not including the said building items in the valuation.		
Total, Acct. 109, Hydro-Electric Plant,	$6,766	$3,190
Acct. 112, TURBINES AND WATER WHEELS.		
1 90 horse power horizontal water wheel and 1 60 horse power ditto, NOTE: Installed in 1892. Governors removed some time ago because of unsatisfactory operation.	$3,346	$1,338
Total, Acct. No. 112, Hydro-Electric Plant,	$3,346	$1,338
Acct. No. 115, ELECTRIC GENERATORS.		
1 300 k.w., 2300 volt, 3 phase, 60 cycle, alternating current generator, with drive pulley and exciter pulley, on		

	Cost New	Cost New Less Accrued Depreciation
foundation. (This machine was built in 1907 by General Electric Co. and was bought second hand by the Respondent Company and installed about the latter part of 1915. The power available from the Water Right is stated by Mr. Franklin, General Manager of the Company, to be 150 horse power, or 112 to 100 kilo-watts from the generator. (See Record of hearing, Oct. 26, 1920, page 51, "It will generate about 112 kilowatts.") (Also see same Record, page 59. Mr. Loeb, an Engineer appearing for Respondent places the capacity of the Hydro-Electric plant at 100 kilowatts, Record of hearing of Jan. 2, 1923, page 249.) (Reference to Exhibit P-20 shows that the plant, at times, operates well below even the 100 kilowatts point.) From the foregoing it cannot be disputed that the use of a 300 kilowatt generator is not warranted in this plant. A generator of 300 kilowatt capacity is evidently operating at from one-quarter to one-third of capacity, and therefore far lower in efficiency than a machine of the proper size would operate at. The claim of the Plaintiff is that the value of this item should not fairly and properly exceed that of a generator of the proper size, which, at the most, would be a 120 kilowatt machine. Based on actual quotation, the cost new of a modern 120 k.w., 3 phase, 2300 volt generator, of the best possible design for this service would be as follows: (Actually 150 k. v. a.)		
Generator, f.o.b., Schenectady, $1,150.00 Freight, 42.60 Foundation, 120.00 Hauling and installation, 50.00 Total, $1,362.60		
The maximum value that this item can therefore receive will be,	$1,363	$1,363
Belted exciter for above generator. NOTE: Machine listed under this item by Respondent is far above the required size for the requirements of the generator. Proper size machine would be 5½ kilowatts. Based on actual quotations, the cost new would be as follows:		

	Cost New	Cost New Less Accrued Depreciation
Generator, f.o.b., Schenectady, $210.00 Freight, 3.83 Hauling and setting up, 20.00		
Total, $233.83		
Maximum this can receive,	234	234
Brush Arc Machine. (Built by Brush Electric Co, 1899, to operate at 5 amperes and 8000 volts.) The Respondent operates this machine at 4 amperes and about 2250 volts which means its output is approximately one-quarter load. The efficiency of these machines, *even at full load*, is too low to permit of their being retained in service except where the costs of power are a minimum. Even in such cases Brush arc machines have been very generally replaced by the more efficient mercury arc rectifier. With the low load at which this machine operates, its efficiency will be well below 50% and it should be removed from service at once and scrapped. The power it is wasting could and should be profitably utilized. The cost new is a hypothetical one because the machine is so antiquated it could not be reproduced new, on a practical basis.	$2,765	$ 0000
Total, Acct. No. 115, Hydro-Electric Plant,	$4,362	$1,597
Acct. No. 116, ACCESSORY ELECTRIC POWER EQUIPMENT.		
3 300 k. v. a. transformers, 6600-2300 volts, 60 cycles. NOTE: These transformers are, in fact, located in the Hydro-Electric Plant, but are used in connection with the power from the Steam Plant, to step it down to the standard distribution voltage of the Respondent's distributing system, namely, 2300 volts. Their presence in this plant results from the existence of the Steam Plant and they are one of the great causes of the seriously high loss in power which has come about since the Steam Plant began to operate in 1920. They are from three to four times too large for the duty they perform, having an aggregate capacity of 900 k. v. a. It is the Plaintiff's		

	Cost New	Cost New Less Accrued Depreciation
claim that they do not belong in the valuation of the Hydro-Electric Plant, since they are, in fact, an accessory to the steam plant.		
3 regulating transformers for series incandescent lighting system,	$1,741	$1,306
Mercury arc rectifier, (Built 1909 and designed for use at 5 amperes, 4000 volts to the series arc lighting circuit.) Now operated at 4 amperes and approximately 2300 volts on the rectified side. Beside this, the primaries of this rectifier are wound for 1100 volts supply, whereas the station supply voltage is 2300. This makes it necessary to use a step down transformer or compensator. The result of this is a much lower efficiency than the rectifier would show if its coils had been rewound to meet the conditions of load here.	1,389	833
Auto transformer, 2300-1100 volts, 30 k. v. a. (Used to step down station voltage for mercury rectifier, preceeding item, for reasons stated.)	$195	$98

Station switchboard. (Has 11 panels, 2 in. slate with indicating, recording, and control equipment. See photograph in Exhibit P-3 or P-27 at "B," a so testimony Oct. 3, 1922, page .) The extreme right hand panel, facing board, is not and has not been connected for years. Switches 4 and 5 and attendant equipment were not connected until after the hearings in this case began last fall, October, 1922. This portion of the board is for the Water Company load and it does not form a part of the "Used and Useful" property of the Respondent. It may be noted that the value new assigned by the Respondent for this switchboard is $8,622.00, which is over $86.00 per kilowatt capacity of the plant. (See pages 62 and 63 under alternating current generator.) Based on quotations the cost new of the "Used and Useful" portions of this switchboard will be as follows:

Generator panel,	$700.00
Incoming power panels for two circuits,	700.00
Station panel,	500.00
Street lighting panels,	680.00
Total,	$2,580.00

		Cost New	Cost New Less Accrued Depreciation
Freight,	234.00		
Hauling,	30.00		
Erection,	650.00		
Total for switchboard,	$3,494.00	3,494	2,621
20 lightning arrestors, 2300 volts		126	95
22 choke coils, type AF,		188	141
2 lightning arrestors, Westinghouse,		84	71
Station wiring. (An outside estimate of the cost to wire the equipment in this plant, exclusive of station lighting, which is included in cost of building) is as follows:			
Generator and Exciter,	$140.00		
Incoming power circuits,	180.00		
Station circuits,	70.00		
Street lighting equipment,	270.00		
Miscellaneous,	90.00		
Total material and labor,	$750.00	750	525
Total, Acct. No. 116, Hydro-Electric Plant,		$7,967	$5,690

Acct. No. 117, MISCELLANEOUS POWER PLANT EQUIPMENT.

Lot of shafting, pulleys, clutches, shaft hangers, belting, etc., etc., also certain items of shelving, fire hose, chairs, etc. For the power transmitting equipment Respondent sets up a value of $4,082, and for the lot of shelving, chairs, fire hose, etc., a value of $185.00. The total of these two is $4,267.00 for the Hydro-Electric Plant. This plant was built about the year 1892 and this antiquated power transmitting equipment has never been replaced or modernized since that time. It is expensive to maintain because of repairs and it is more expensive to operate because of its extreme inefficiency. In the course of the engineering conferences, Mr. Loeb, one of the Respondent's engineers, stated that the efficiency should be as high as 85% but, in view of its condition this is undoubtedly high. The Respondent Company could have, and should have, rearranged the machinery in this plant many years ago so that this water power might have yielded more nearly its possible output in kilowatt hours per year. This would be accomplished by placing the generator, one of 120 k.w. capacity, which

	Cost New	Cost New Less Accrued Depreciation

is the proper size, in the wheel house near the driving water wheel, as is the custom now and for the past fifteen or twenty years. This generator would be driven by means of an oil-immersed link chain, the efficiency of which will exceed 97%. The resulting output per year from the Hydro-Electric Plant would thereby be increased by more than 30%. The improvement through the use of a proper sized generator will be in excess of 92|80 or 1.15, and the improvement due to the elimination of the present old shafting, belting, clutches, etc. will be in excess of 97|85 or 1.142. Total improvement will be in excess of

$$1.15 \times 1.142 = 1.312$$

The improvement is therefore 31.2%.

Respondent's Exhibit No. 8 shows in column giving results of "Possible Economies" in operation that the Hydro-Electric Plant can produce 642,690 k.w. hrs. per year due to its being sychronized with other sources of supply. (See Resp. Exh. No. 8, second column from right, line 34-3.) This is based on the present over-sized generator. With the improvements as described above, this output will be $642,690 \times 1.312 = 843,209$ k.w. hrs. per year, from the Hydro-Electric Plant. To this must be added the saving of the present losses due to the use of the Brush arc machine which be in excess of its annual output since its efficiency of operation is less than 50%. From the Respondent's Annual Reports to the Utility Commission it will be seen that this will amount to from 30,000 to 40,000 k.w. hrs. per year. This will bring the total output from the Hydro-Electric Plant approximately 875,000 k.w. hrs. per year. The excessive repairs which these old and second hand generators and the antiquated shafting and belting, etc., have been imposing on the Respondent, together with the salvage from the disposal of such equipment would soon pay the small cost of such improvements. They would cost less than one or two months' repairs on the old steam plant, and would bring in good revenue at low operating costs.

	Cost New	Cost New Less Accrued Depreciation
Based on actual quotations, the cost of the installation of the generator near the water wheel, including the chain drive, oil bath, and all complete would be as follows:		
Chain, including sprockets, and oil,	$741.59	
Welded steel casing for oil bath,	100.00	
Freight,	18.00	
Setting up, including support for generator,	300.00	
Total for improved method of gen. drive,	$1,159.59	
To the cost of the drive should be added the sum of $480.00 for the reason that a slower speed generator would be used with the chain drive referred to. This would bring the gross cost of the improvement up to $1640 or about 40% of the value placed on this antiquated power transmission equipment by the Respondent as its "Cost New." The salvage value of the equipment displaced by the improved drive would be about $250.00 and this may properly be credited against the above total cost, giving a net cost of $1390.00. This expenditure would be returned 100% several times per year through the value of the increased power output from the Hydro-Electric Plant, based on the present cost of purchased power; and still more if based on the excessive costs of power from the steam plant. The total replacement cost new for this item was agreed on in the conferences as $4267. (Made up as shown at bottom of page 66 and top of 67.) The depreciated value of the power transmitting equipment cannot exceed the cost of proper equipment for this purpose; namely, $1390.		
Plaintiff's values this item:		
Shafting, pulleys, clutches, shaft hangers, belting, etc., etc.,	$4,082	$1,390
Shelving, chairs, fire hose, etc.,	185	93
Total, Acct. 117, Hydro-Electric Plant	$4,267	$1,483

SUMMARY OF PHYSICAL PROPERTY VALUATION, HYDRO-ELECTRIC PLANT. BY ACCOUNTS.

Account Number	Item	Cost New	Cost New Less Accrued Depreciation
101	Land,	$431	$431
108	Dams, Canals and Pipe Lines,	5,644	3,145
109	Power Plant Buildings,	6,766	3,190
112	Turbines and Water Wheels,	3,346	1,338
115	Electric Generators,	4,362	1,597
116	Accessory Elect. Equip.,	7,967	5,690
117	Misc. Power Plant Equip.,	4,267	1,483
Total Value, Physical Property Hydro Plant,		$32,783	$16,874

VALUATION OF PHYSICAL PROPERTY

BASED ON PRICES AS OF JANUARY 1, 1923.

Distribution and Other Outside Property.

NOTE: Where "Cost New" was agreed upon in the engineering conferences, the items are not repeated here in detail.

Account. No. 120, POLES AND FIXTURES	Cost New	Cost New Less Accrued Depreciation
1431 chestnut poles, ranging from 25 to 50 ft. in length,	$22,009	$13,205
The average age of these poles, as shown by records of dates of purchase, covering the period from 1908 to the present time, which information was supplied at request of engineering conference by the Respondent and appears in the minutes of the conference, is 6.4 years. The total purchased in the period from 1908 to 1922, inclusive, the Respondent states, was 1417 poles all sizes included. It is also stated that the total number in place up to December 31, 1922, is 1533, and that there were 67 poles then in stock. This means that some of these poles have been in place since before 1908. The number of such would be somewhat more than 100 poles. From the Respondent's own records, above cited, it is evident that Mr. Franklin's testimony on page 309, Record of Hearing of Jan. 23, 1923, is very much in error. He there states the pole life to be from 6 to 10 years. It		

	Cost New	Cost New Less Accrued Depreciation
is evident that the Plaintiff's claim of a pole life in Millville, of 15 years is substantially correct. With an average age of 6.4 years and a "pole life" of 15 years the "per cent. condition" for the item of poles will be 57.4% If Franklin's "pole life" figures were taken the condition would only be 36%. The depreciation on this pole item as taken as slightly less than the facts would warrant. Depreciation is 40%, condition is 60%.		
Add for poles installed in 1922, 105 of various sizes,	1,569	1,569
Total for Poles	$23,605	$14,774
Guys, head, anchor, and stub, etc.,	2,753	1,652

Cross-Arms (See testimony, Martz, p. 492).

265	single	6	pin	@	$2.34	$620
1176	"	4	"	@	1.98	2,329
521	"	2	"	@	1.52	792
220	double	6	"	@	4.82	1,061
738	"	4	"	@	4.10	3,024
231	"	2	"	@	3.19	737
Total,						$8,563

	8,563	5,566

The unit cost of these cross arms are based on actual quotations for material liberal costs for labor of installing as follows:

Prices are for FIR ARMS

Size of Arm	Material Arm	Hard-ware	Pins	Labor	Total
single 6 p.	$1.16	.48	.18	.52	$2.34
" 4 p.	.86	.48	.12	.52	1.98
" 2 p.	.55	.46	.06	.45	1.52
double 6 p.	2.32	1.35	.36	.79	4.82
" 4 p.	1.72	1.35	.24	.79	4.10
" 2 p.	1.10	1.29	.12	.68	3.19

NOTE: Prices of labor entering into the above figures are higher than are actually paid by the Respondent as of late 1922. Additional cross arms installed in 1922 are as follows:

27	single	6	pin	@	2.34	$63
99	"	4	"	@	1.98	196
62	"	2	"	@	1 52	94
45	double	6	"	@	4.82	217
42	"	4	"	@	4.10	172
20	"	2	"	@	3.19	64

Total, 1922 additions,	$806	806	806
Total for Cross Arms,		$9,369	$6,372

		Cost New	Cost New Less Accrued Depreciation
Miscellaneous Brackets, including arm guards, break arms, "J" brackets, screw pins, steel arms, cob pins and wood brackets,	807		484
Total Acct. No. 120, Poles and Fixtures,		$36,534	$23,282
Acct. No. 123, DISTRIBUTION SYSTEM.			
Conductors. (all copper wire)			
26,582 lbs. no. 6 B&S ga. t.b. w.p.	6,745		
7,262 lbs. no. 4 B&S ga. t.b. w.p.	1,705		
24,052 lbs. no. 2 B&S ga. t.b. w.p.	5,460		
11,424 lbs. " 1-0 B&S ga. t.b. w.p.	2,492		
Total in place to Jan. 1, 1922	$16,402	$16,402	$13,942

The unite costs of the above conductors in place is made up as follows:

Gauge	Costs per pound Wire	Labor	Total
No. 6	$0.190	$0.0530	$0.2530
No. 4	0.185	0.0498	0.2348
No. 2	0.185	0.0420	0.2270
No. 1-0	0.185	0.0334	0.2184

Prices used for labor are higher than are actually paid by Respondent as of late 1922.

Additions to Conductors during 1922,			
4721 lbs. no. 6 B&S ga.,	$1195		
42 lbs. no. 4 B&S ga.,	12		
1791 lbs. no. 1-0 B&S ga.,	392		
Total,	$1,599	$1,599	$1,599
Total, Conductors,		$18,001	$15,541
Insulators, including brown and white porcelain, glass, and suspension types,			
total number to Dec. 31, 1922	12,448	$3,050	$2,288
Added during 1922, various sizes and types, total number	599	143	143
Total for Insulators,		$3,193	$2,431
Total, Acct. No. 123, Distribution System,		$21,194	$17,972

Acct. No. 124, LINE TRANSFORMERS AND DEVICES.

Transformers, including 98 for operation on 2300 volt primary, total k. w. capacity 634, ranging from 1 k.w. size to 30 k.w. size), and 7 for operation

	Cost New	Cost New Less Accrued Depreciation
on 6600 volt primary, (total k.w. capacity 367½, ranging from 30 k.w. to to 75 k.w. size).	$10,769	$8,615
Transformers added during 1922, (Net change 12 addition 2300 volt transformers of aggregate capacity 55½ k.w. increase, 18 added and 6 removed).	753	753
Total transformers,	$11,522	$9,368
Line devices, including horn gap and Garton-Danie s arrestors, also transformer cutouts,	267	187
Total, Acct. No. 124, Line Transformers and Devices,	$11,789	$9,555
Acct. No. 125, ELECTRIC SERVICES.		
25 3 wire services @ $10.52 each,	263	
773 2 wire services @ 7.04 each	5,442	
Total for services in place to Dec. 31, 1921,	$5,705	$4,564
The above unit prices as well as totals, are averages of figures as determined by engineers for Respondent and Plaintiff which were so close as to warrant averaging. They were agreed upon.		
Services added during 1922 are as follows:		
297 2 wire services @ $7.04 each,	2,091	2,091
Total for services, Acct. No. 125,	$7,796	$6,655
The total cost for this item as presented by Respondent, (See Exh. R-10, page), does not appear to be as agreed upon. It would appear that the additions for 1922 were added at the figure stated by the Respondent Company but as these include the excessive overhead, they should not be used.		
Acct. No. 126, ELECTRIC METERS.		
Meters in Service, including 795 110 volt, single phase, ranging from 5 ampere to 300 ampere capacity, mostly of the smaller capacities,	$7,419	$5,935
Also 26 220 volt, 3 phase, ranging from 10 to 600 ampere capacity,	1,167	934
Also 37 110 volt, single phase, ranging from 5 to 150 ampere capacity in stores,	465	465

	Cost New	Cost New Less Accrued Depreciation
Also 4 220 volt, three phase, ranging from 5 to 75 ampere capacity in stores,	160	160
Miscellaneous	34	34
Total to Dec. 31, 1921	$9,245	$7,528
Additions of Meters during 1922, including 291 ranging from 5 to 100 ampere capacity,	2,997	2,997
Total, Acct. No. 126, Electric Meters,	$12,242	$10,525
Acct. No. 127, ELECTRIC METER INSTALLATION.		
1123 Meter Installations, including the additions made during 1922,	$946	$849
Acct. No. 128, MUNICIPAL STREET LIGHTING SYSTEM.		
Brackets, mast arms, and center span suspensions, (to 12-31-1921) agreed price,	$6,228	$4,360
Added during 1922,	461	461
Total,	$6,689	$4,821
Lamps and Fixtures, (to 12-31-1921),		
Agreed price,	6,842	4,789
Added during 1922,	490	490
Total,	$7,332	$5,279
Conductors,		
24,140 No. 6 B&S ga. t.b. w.p. wire, (for unit cost of wire see under Acct. No. 123, page 10, this Exhibit). Total to 12-31-1921,	6,107	4,886
Added during 1922, inc. insulators,	1,388	1,388
Total,	7,495	6,274
Total, Acct. No. 128, Municipal Street Lighting System,	$21,516	$16,374
Acct. No. 107, GENERAL EQUIPMENT.		
2 Ford trucks, one is over 8 years old and the other over 5 years old,	$769	$200
Miscellaneous furniture,	300	225
Total, Acct. No. 107, General Equipment,	$1,069	$425
Acct. No. 132, ELECTRIC TOOLS AND IMPLEMENTS.		
Miscellaneous tools, etc.,		
Total for Acct. No. 132,	$225	$191

	Cost New	Cost New Less Accrued Depreciation
Acct. No. 133, ELECTRIC LABORATORY EQUIPMENT.		
Illuminometer, etc.,		
Total for Acct. No. 133,	$336	$286

Acct. No. 152, MATERIALS AND SUPPLIES.

NOTE: The only item listed under this account is a lot of coal, 759 gross tons, which is located at the steam plant if anywhere. The facts in this case prove that at no time, up to the present, has the steam plant been a necessity as a part of the Respondent's property. This item is, therefore, not considered at this point in the Valuation. The entire matter of the Steam Plant is treated of at another place in this Exhibit.

SUMMARY OF PHYSICAL PROPERTY VALUATION, DISTRIBUTION AND OTHER OUTSIDE PROPERTY, BY ACCOUNTS.

Account Number	Item	Cost New	Cost New Less Accrued Depreciation
120	Poles and Fixtures,	$36,534	$23,282
123	Distribution System,	21,194	17,972
124	Line Transformers and Devices,	11,789	9,555
125	Electric Services,	7,796	6,655
126	Electric Meters,	12,242	10,525
127	Electric Meter Installations,	946	849
128	Mun. Str. Lighting System,	21,516	16,374
	SUB-TOTAL,	$112,017	$85,212
107	General Equipment,	1,069	425
132	Electric Tools and Implements,	225	191
133	Electric Laboratory Equipment,	336	286
Total, Distribution and Other Outside Property,		$113,647	$86,114

MILLVILLE ELECTRIC LIGHT COMPANY

VALUATION AND RATE CASE

VALUATION OF STEAM PLANT

NOTE: For location of Steam Plant, see Exhibits P-23 and P-24. For Photographs, P-7, P-8, P-9, P-28, and P-29. For Output, P-1, and for Operating Costs, P-2, P-12, (pages 7-12, inc.) also P-15, P-17 (pages 2 and 3), and P-18.

The Record in this Case shows that this plant is an aggregation of second hand equipment, (Franklin, p. 300), of antiquated design, selected with no regard whatever for physical condition, operating economies, or fitness as to size and capacity. The exciters are too large, (Temple, p. 160 and 161), and inefficient, (Loeb, p. 260). Condenser and motor for driving too large for modern plant of this capacity, (Temple, p. 158) due to absurdly high steam consumption by the old engine. Transformers which step down the voltage of the supply from the Steam Plant, (located at the Hydro-Electric Plant, see Acct. No. 116, page 5, this Exhibit), are far too large, (Loeb, p. 275). Boiler feed-pumps too large, Franklin, p. 304).

The main unit in the plant is an old "Rice & Sargent' engine now in its 21st year, connected to a 6600 volt, alternating current generator of General Electric Manufacture, of same age. Such equipment was superceded many years ago by the more efficient and less expensive steam turbine. Respondent claims there are still such engines used but is unable to cite any examples of this, (Loeb, p. 259). (Curtis Publishing Co.)

The boilers came out of the City Hall, Philadelphia, where, according to the records of the City,

they were installed in 1897. (These are two of the four boilers sold as "Old Equipment" by the City of Philadelphia in 1916. See sworn affidavit by William J. McKee, Clerk in the City Department which has the handling of these transactions, which forms a part of this Exhibit and appears later herein.) They were sold by the City of Philadelphia for $207.00 each, with an addition of $6.00 each for the mud drums. (See transcription of actual "Bill of Sale" in above affidavit.) (Franklin states boilers came from City Hall, Philadelphia, p. 301.) They are therefore in their 26th year of age.

The engine has been seriously wrecked several times since the Respondent began to operate it in 1920, after the plant was four years or more in building, and its main casting is patched up with welds and bolts in an effort to get it going again. (See photographs).

The operation of this lot of equipment, which may be properly characterized as "junk," and the expense of constantly repairing it, have run into such high costs of power per kilowatt-hour output from the plant, as to be actually absurd. (See Exh. No. P-12.)

The first year it operated the costs were over 11 cents gross, nearly 8 cents net, per k.w. hr. The next year these costs were 19 cents and 11 cents, respectively. The figures for 1922 in the early part were about the same. No reliable information for 1922 for this plant can be had until the cost of repairing the last two breakdowns are finally known. (See Exhibit 20 for costs of maintenance, etc., to end of April, 1922.)

The impression on the part of certain of the representatives of the Respondent appears to be that the plant was built in 1919 or 1920 and that modern equipment could not be had at that time. (Loeb, question and answer, p. 451; also same, p. 254 and 255.)

Millville Electric Light Company Valuation and Rate Case.

EXHIBIT P-31.

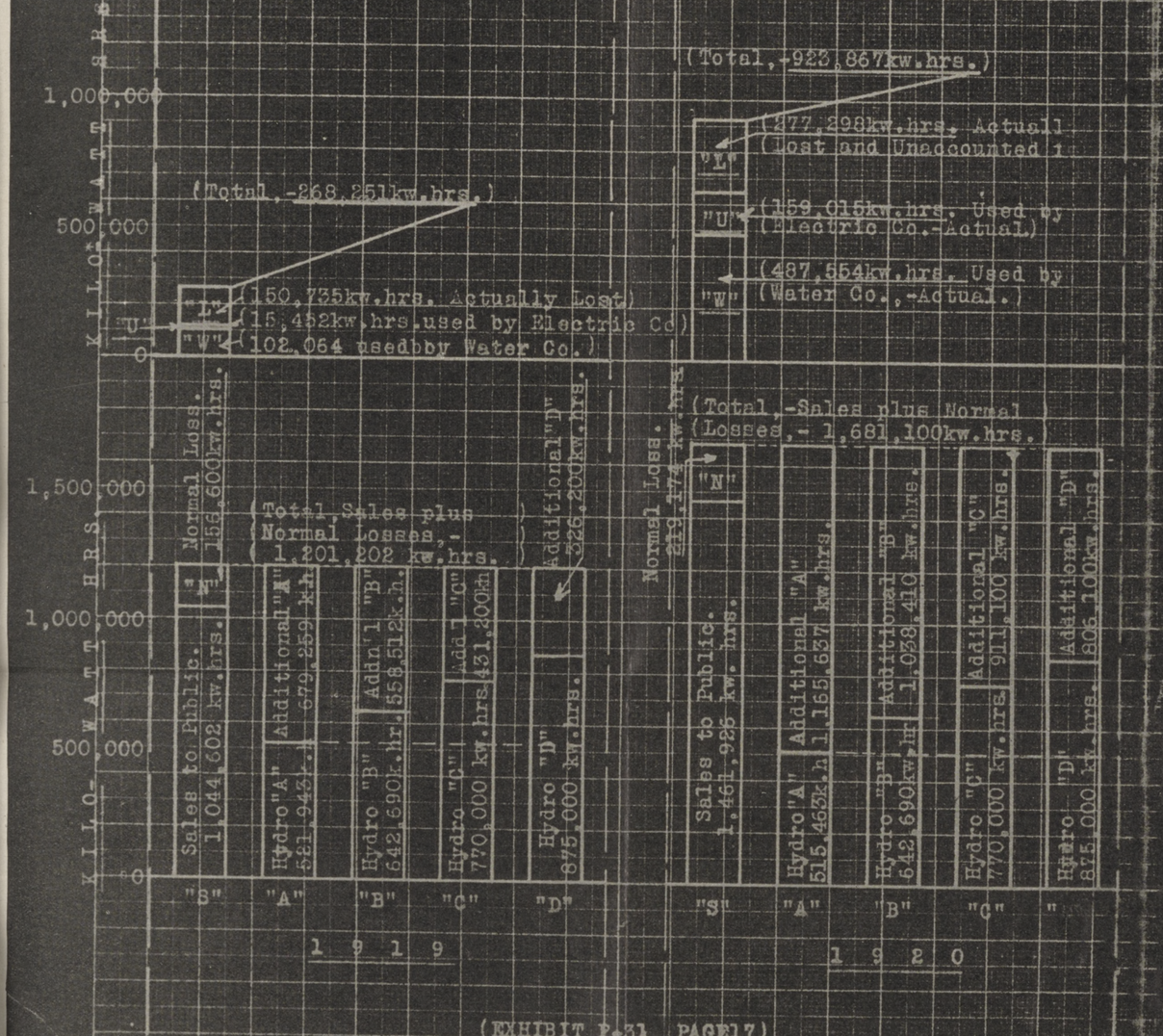
POWER USED BY ELECTRIC AND WATER COMPANIES, ALSO POWER LOST SINCE OPERATION OF STEAM PLANT BEGAN; AND,

EFFECT OF ECONOMIES IN HYDRO-ELECTRIC PLANT,--YEARS 1919, 1920, 1921, AND 1922.

K E Y (For all years shown)

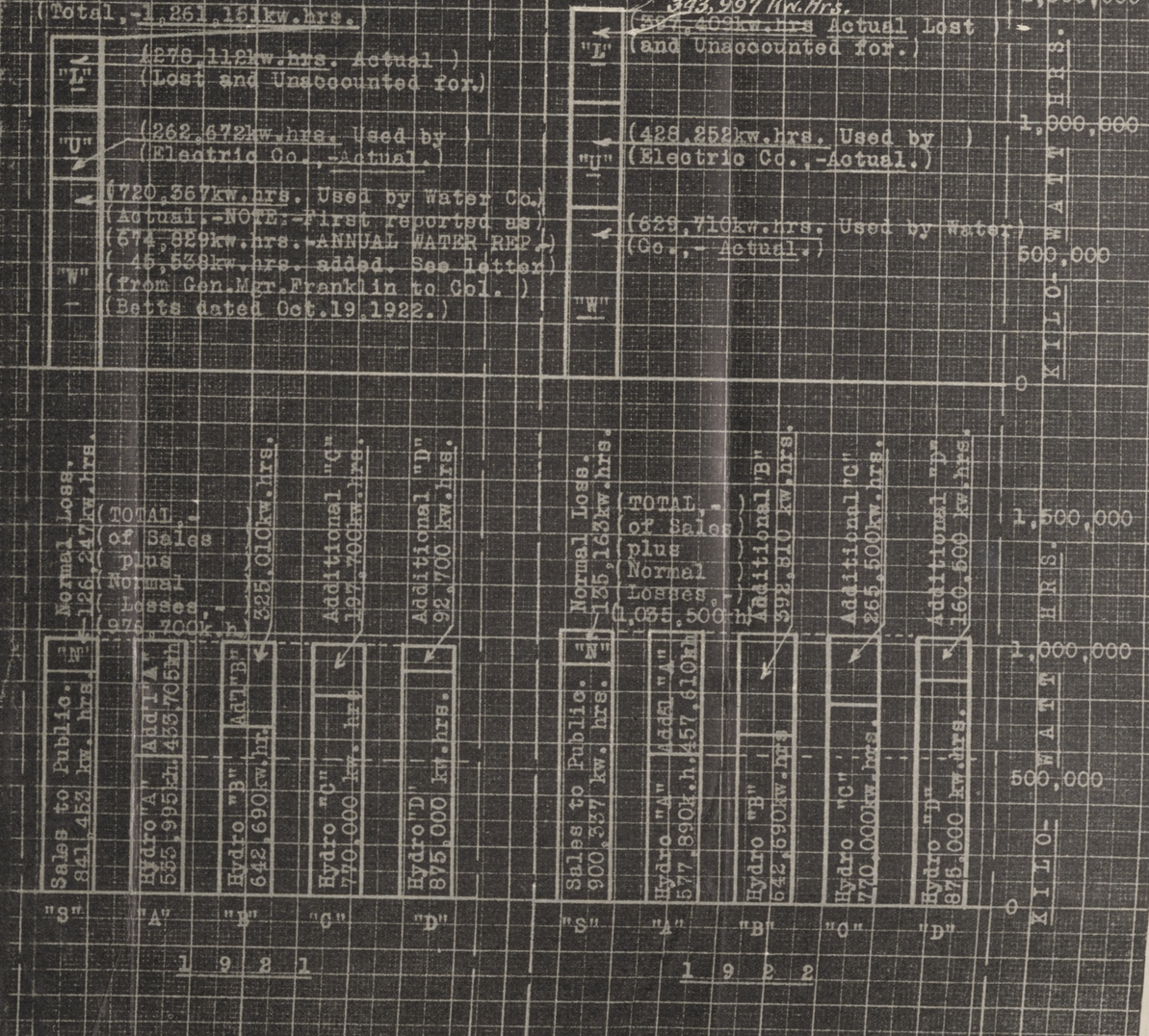
Top Portion, ("L",--Actual Power Lost and Unaccounted for.
("U",-- " " " Used by Electric Company,-Respondent, this Case.
("W",-- " " " Used by Water Co.,-Same ownership and management as Respondent, and located on same premises.

Lower Portion, ("S",--Actual Sales to Public, plus Normal Losses "N".
("N",--Normal Losses, Approx. 15 per cent of sold power to Public.
(NOTE: In 1919, it will be seen, Actual Losses "L" were



K E Y (continued)

(lower than Normal Losses "N". Examination of REPORTS of Respondent will show (Actual Losses also lower in previous years. The territory served by Respondent (is compact and percentage applied for Normal Losses "N" is liberal.
("A",--Actual power generated, Hydro-Electric Plant; and, Additional power needed to meet Sales to Public and Normal Losses, under present conditions, present generator being 300 k.w. capacity and from three to four times too big, hence very inefficient at operating load.
("B",--Hydro-Electric Plant output with same oversize generator but with improvement due to synchronizing. (See page 7, this Exhibit.)
("C",--Same as "B" but with proper sized generator, (120 k.w.)-and old Brush Arc machine removed. (See peage 7, this Exhibit.)
("D",--Same as "C" but driving generator direct from water wheels with high efficiency chain drive instead of present antiquated shafting, etc. (See page 7, this Exhibit.
(Upper portion of "A", "B", "C", and "D" show remaining power required in each case.



(EXHIBIT P-31, PAGE17)

The facts in this case are that the initial steps toward building this plant were taken in 1915. The books of the Respondent show expenditures on certain items of the steam plant in the latter part of 1915. General Manager Franklin's own statement supports this. (Franklin, p. 370.) Certainly no one will dispute that deliveries on turbo-generators and other power plant and construction equipment were substantially from four to six months, to any purchaser whose credit was acceptable, in 1915, or 1916. Even in 1917, and later, deliveries were not longer than eight months as a rule. There are many examples of the above which cannot be disputed. It is not admitted by the Plaintiff that it was impossible to get such equipment at any time in the period concerned, although the Respondent has not actually proven that any effort was really ever made to get such equipment.

The books of the Respondent further show that the work of building this plant was being continued, in some fashion or other, during the years, 1916, 1917, 1918, and 1919. (Also in 1920, and 1921, see Exhibit No. 20.) The "Book Costs" are out of all proportion to the work done, as judged from the resulting plant, or even for a first class plant.

For the above reasons it is claimed that statements as to the difficulty of securing modern equipment in 1919, or 1920 are not in any way pertinent to this case. Neither are costs of modern equipment based on prices during these years pertinent.

Another point offered by the Respondent, which the Plaintiff submits, is not borne out by the facts, is the allegation that it was necessary to built a plant in order to meet the requirements for power. The Respondent purchased power for four years after it began to build a plant to meet its needs for power. (See Exhibit No. P-1, also Respondent's Annual Reports to the Commission.)

If the Respondent desired to have an increased supply of power it could and should have brought about certain improvements in the Hydro-Electric Plant which would have resulted in an annual output of more than twice that of the years 1917 and 1918 and around 59 to 60 per cent. more than that of the following years. (There is no available record of power generated prior to 1917 but from amounts sold in these years, the above statement would also apply to the prior years.) If this simple improvement, (See under Acct. No. 115, pages 4 and 5; also 117, pages 6, 7, and 8, this Exhibit), had been made the requirements of power purchased would have been tremendously reduced and great savings of money effected. But, even though it was not done, there seemed to be no difficulty in purchasing the needed power.

Furthermore, the Respondent will not deny that the Millville Manufacturing Company, from whom the power is bought, installed additional machines and transformer capacity to meet possible increases in the power requirements of the Respondent, (p. 298). This was done sufficiently early in the period to permit the Millville Manufacturing Company to serve as the only reliable standby which the Respondent Company has to depend upon for the continuity of its power supply to the people of the community supplied, namely the City of Millville.

It is the claim of the Plaintiff that there has not, thus far in the history of the Respondent, been any necessity for the existence of a steam plant. It is further the claim of the Plaintiff that if any such plant had been properly needed, there was no reason for assembling a lot of antiquated, worn out, mismated and unrelated, "alleged" equipment as is found in this Steam Plant. It is admitted by the Respondent's General Manager that no estimates on the propostion were made before launching on the venture. (p. 372.) Such a procedure is, of course, ab-

surd, but it is no more absurd than is the existence of any steam plant at all in the face of the fact that, with proper conditions in the Hydro-Electric Plant, there is not enough load remaining to warrant the operation of a steam plant.

Reference to the Chart showing "Power Used by Electric and Water Companies, also Power Lost Since Operation of Steam Plant Began; and Effect of Economies in Hydro-Electric Plant, Years, 1919, 1920, 1921, and 1922," which appears on page 17, this Exhibit, will show that losses due to the operation of this steam plant are by no means confined to the high operating and maintenance costs within its confines. It will also show what wonderful improvements can be realized in the Hydro-Electric Plant by the expenditure of a sum of money which would be negligible as compared with the amounts that have been and are being spent in futile efforts to rejuvenate the steam plant.

The data upon which the Chart is based come from the Respondent's records and Reports to The Commission. The numerical quantities are set down against the graphical presentations so that no additional table of figures will be needed.

The conclusions from the facts presented in the Chart may be summarized briefly as follows:

(L) The "lost and unaccounted for" power has grown steadily since the steam plant began to operate in 1920, until in 1922, it has become approximately 2 and 2-3 times what it was in 1919. In spite of this, the actual "sales to the public" are only about nine-tenths what they were in 1919. Some of this increase in loss is due to an increase in distributing transformers on the lines, but the greater part of it is due to the line and transformer losses between the steam plant and the switchboard at the Hydro-Electric Plant, (Loeb, p. 275). The transformers have an aggregate capacity of 900 k.v.a. and they are around three or four times too large. There

are a few customers of the Respondent who are supplied from this 6600 volt line, and when the steam plant is broken down, which is a great part of the time, these customers are supplied by stepping up the voltage at the Hydro-Electric Plant through these over-sized transformers. The elimination of one of these 300 k.v.a. transformers will only (p. 275) partly correct the trouble. The entire 6600 volt service should be abandoned and the customers supplied from the 2300 volt lines.

(U) The power "Used by Electric Company" has increased to more than 27 times its 1919 amount since the steam plant began to operate, the maximum being reached in 1922. Practically all the increase being in the steam plant.

(W) The power "Used by Water Company" is listed or embodied in the "Commercial Metered Power Sales" and in a sense, this is correct. However it should be remembered that the Water Company is under the same management and ownership as the Electric Company, and it is most peculiar for the Water Company to be buying such large amounts of power when it has a "water right" which gives it sufficient power to do the required pumping for its customers for almost the entire year. It does not save anything by not using this water power and it has been charged a total more than $75,000.00 for power for pumping during the years 1920, 1921, and 1922. (See Annual Water Co. Reports to The Commission and letter by Gen. Mgr. Franklin, Oct. 19, 1922, to Col. Betts.) If the need for pumping by electric power arose from the need of repairs to the water driven pumps, ("Repairs to Pumping System," Acct. 407, Water Co. Reports, amounted in the three years, 1920, 1921, and 1922 to $8,177.13, which would have bought and installed a complete new pump with considerable to spare), it is absurd to have allowed the repairing to string along for three years and entail such a tremendous power bill as a

consequence. If, on the other hand, there has been an effort to provide additional load for the steam plant in order that the absurdity of the operation of the steam plant shall not become apparent, and if the water pumping has been done by electric power to that end, it is still more absurd. In either case the situation is outrageous.

It is probably a fact that some electric power pumping has to be done at certain times of the year. On certain occasions when there is a scarcity of water the Millville Manufacturing Company is said by Gen. Mgr. Franklin to request the Water and Electric Companies to stop using water and, in such cases, the Millville Manufacturing Company supplies both Companies, (Water and Electric) with the equivalent of the water power they are giving up, in the form of electric power. As the Water Company's share of this already belongs to it there would, of course, be no charge for it by the Electric Company. Then, it is said, also by Gen. Mgr. Franklin, that there are times in dry months of the summer when there is considerable lawn sprinkling and the water power pumping has to be augmented by some electric pumping. It is understood through Mr. Martz, one of the Engineers for Respondent, that the total amount of power the Water Company is expected to use through the remainder of the current year is 30,000 k.w. hrs. because the water power driven pumps are now operating steadily and regularly.

From a brief study of the Chart, it will be evident that without the tremendously, relatively, load from the Water Company there would not have been a single year in which the steam plant operation would have been justified. (With steam plant eliminated "U" would be small, see 1919, and, "L" would be approximately same as "N").

It is not thought necessary to discuss the lower portion of the Chart, namely, "S," "A," "B,"

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"C," and "D," as its import will be clear upon a brief study. It may be noted that in the last two years, the "Sales to the Public" plus "Normal losses" have been less than the total of "L," "U," and "W," for the corresponding years. It may be also noted that whether improvements in the Hydro-Electric Plant are made or not, the "Additional Power Required" is far too small to warrant the operation of a steam plant, even if it were one of the finest ones that money could buy and engineering skill construct, much less such a plant as is involved in this case.

(It may also be noted that if the improvements were made in the Hydro-Electric Plant there would have been a saving of approximately $9,000.00 in 1922, (based on power at 3 cents per k.w. hr.) and more than $10,000.00 in the three years each preceding, or $39,000.00 in all.)

(When it is realized that the proposed improvements in the Hydro-Electric Plant are more simple to bring about than those proposed by the Respondent to be made at the steam plant, and also that they are less expensive and more sure to produce results, it is evident there should be no hesitation in putting them into effect without delay.)

As to the availability of purchased power to supply the "Additional Power Required" as indicated in the Chart, it is clear from the record in this case that the Respondent made no honest effort to provide its requirements in this way, (Franklin, p. 373 and 374). At another point in the record the insinuation, and indeed, the direct statement is made, that there was at times purchased a very small amount of current, from the Millville Manufacturing Company, (Franklin, p. 297 and 298).

A summary of the Respondent's allegations upon which the alleged need of building the unfortunate steam plant appears to be based is: (In additions to those already treated of, preceding pages)

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(1) The Millville Manufacturing Co. had no capacity until the year 1919, (Franklin, p. 373). Then put in 2500 k.w. unit (p. 298).

(2) Prices of purchased power were from 2¼ to 3 cents per k.w. hr. (Franklin, p. 373).

(3) Losses on purchased power claimed to be as high as 10 per cent., (Franklin, p. 529, Exhibit R-19).

(4) Voltage of power from Millville Manufacturing Co. unsteady, (Franklin, p. 315).

Plaintiff submits that the facts relative to the foregoing, are as follows:

(1) Greater part of power used by Respondent, years 1917, 1918, and 1919, was, in fact, actually purchased from the Millville Manufacturing Company. (See Exhibits P-1, P-17, and P-20; also Reports of the Respondent to The Commission, page 22-bottom and page 34.)

Moreover, Respondent's own tardiness and delay in carrying on the work of building the steam plant by spending about four years at it, does not indicate there was much fear as to their ability to buy power from this source.

(2) Facts are as follows:

Power purchased from Millville Manufacturing Co. and prices for same. (See Exhibits above referred to).

Year	K.w. Hrs. Purchased	Amount	Cost-Cents Per K.w. Hr.
1916	447,271	$7,649.31	1.71c
1917	1,005,431	18,027.01	1.79c
1918	810,669	16,404.38	2.02c
1919	790,910	15,968.20	2.02c
1920*	743,600	18,624.60	*2.55c
1921*	867,660	26,179.80	*3.02c
1922*	258,318	7,899.54	*3.06c

(*NOTE: In these years steam plant in operation and these figures are in reality for "stand-by" power.)

(3) Fact are that the losses from the Manufacturing Company to the switchboard of the Respondent are very low. In the first 3 years above given, the entire "lost and unaccounted for" including losses in the distribution lines over the territory, also distribution transformers, and switchboard and substation losses were small, as they should be for a compact territory such as this Respondent serves. (In Plaintiff's Exhibit No. 1, losses are tabulated "in per cent. of power sold," in Respondent's Annual Reports to The Commission they are tabulated "in per cent. of total power generated." When the steam plant began to operate this, of course, gives fictitious percentages because such a great proportion of the "generated" is used up right in the steam plant. The losses really are applicable to the power that is sent out over the lines incurring the loss.) Before the operation of the steam plant the losses were:

1917 148,121 k.w. hrs., or 10.8% of generated, or 12.3% of sold.
1918 64,496 k.w. hrs., or 5.6% of generated, or 5.75% of sold.
1919 150,735 k.w. hrs., or 11.8% of generated, or 14.3% of sold.

As shown by Chart, (p. 17, this Exhibit) the lost power, "L," has been extremely high since the steam plant came on the lines. It will be seen that the losses in transmission from the Millville Manufacturing Co. cannot have been high, in the face of the above facts. Respondent refers to "trifling loss on the line between the two works" (Franklin, p. 313), which proves they are not high in his own estimation.

(4) This is not borne out by the facts. Inspections made by the Engineer for the Plaintiff in Company with Mr. H. E. Carver, one of the Engineers for the Commission, of the power plant of the Millville Manufacturing Company disclosed the fact that the distribution from their plant is made from busbars upon which voltage is maintained by high grade and up-to-date automatic control, at a constancy which is ideal. Charts from recording volt-

meters over extended periods proved that the supply voltage was so near constant so to be practically perfect. It must not be forgotten that this plant of the Millville Manufacturing Company is a modern turbine plant, which with the installation of the last unit, (Franklin, p. 298) of 2500 k.w. capacity has a total of 4,000 kilowatts capacity. It is, moreover, well managed and efficiently operated. It was found that the Manufacturing Co., many years ago, installed three 200 k.v.a. transformers to meet the original requirements of the Respondent for power. In anticipation of increased requirements for power by Respondent, the Manufacturing Co. later added three 150 k.v.a. transformers. (Admitted by Franklin, p. 376). The latter have never been connected in because they are not yet necessary, but they are ready there for the purposes stated, at such times as they may be needed. The Millville Manufacturing Co. has no other use for them but to meet the needs of the Respondent, (also admitted by Franklin, p. 376). There are also additional conductors running from the Manufacturing Company's power plant to the rear of the Respondent's Hydro-Electric Plant which the Respondent will not deny would add to the carrying capacity and lower the losses if they were high, and which the Manufacturing Company people have urged the Respondent to make use of if thy deemed them necessary.

The real fact with regard to the question of purchasing power to meet the requirements at the time of the inception of the steam plant in 1915 and 1916 are summed up in the statement of Gen. Mgr. Franklin who says, "We had no desire to buy current from the Millville Manufacturing Company at that time." (Franklin, p. 375.)

It is submitted by the Plaintiff, that its claim there has not, thus far in the history of the Respondent, been any necessity whatever for the existence

of a steam plant, is indisputably supported by the facts in the case.

The further claim of the Plaintiff, that if a plant had been necessary, there was no reason for assembling this lot of antiquated, mismated, and unrelated, old equipment, as is found in the steam plant, is likewise well supported by the facts.

Respondent does not claim that turbine driven generators were difficult to secure when plant construction actually began (1915), but points to alleged conditions in 1919 or 1920. This has already been referred to on page 75 and 76, herein, and need not be repeated, further than to reiterate that they could have bought any number of such machines that they may have needed had they made an effort to do so.

It is a fact that the management of the Respondent Company has shown a uniform tendency toward the purchase and installation of second-hand equipment, cast off by other users, which tendency seems to have amounted to an obsession or mania, followed by the management regardless of the fact that such junk really costs more money in the final accounting than more modern, efficient, and appropriate equipment would have cost. For example, in this steam plant, the boilers, feed pumps, engines, generator, exciters, etc., which form the main and vitally important portions of the plant, were all second hand, and of improper size, and in deplorable condition. (See previous reference on page 75, herein.) Notwithstanding all this, the alleged cost as set up by the Respondent on the books, for the old equipment in place runs away above what the state of the art would have afforded as of the time of construction. This is true even if the prices of the present time are applied for modern equipment.

This extremely high cost which the Respondent sets up may be due to lack of knowledge of methods of construction or excessive profits taken by the so-

called Contractor or High Pressure Construction Company, (under same ownership and management as is the Respondent), or both; or, it may be due to other things not appearing in the records of the case.

(As has already been pointed out, the Hydro-Electric Plant also has much old and second-hand equipment, of improper size and in such condition as to require excessive annual repairs.)

This condition is not new but has evidently existed in previous years. (Franklin, p. 308 and 309, says in a little over twenty years "the electrical machinery, some of it has been changed three times, none of it less than that and some of it four times.") When such equipment is practically worn out at the time of installation it may be necessary to replace it three or four times in twenty years. Otherwise, it should last from twenty to thirty years from the time of installation, if reasonable care is bestowed upon it.

The Plaintiff claims, that if a steam plant had been necessary the following points cannot be disputed:

(1) Modern steam turbine generator should have been installed instead of the antiquated type of engine which was used.

(On page 20 herein is shown the performance of this type of engine as the Engineer for Respondent, Mr. Loeb, supplied the data in the course of one of the engineering Conferences. It is based on statements of performance as made by the makers of the engine or their successors, (Loeb, pages 269, also 463, et. seq.) and the data from which the curve was plotted was stated, by Mr. Loeb, to take into account engine mechanical efficiency, as well as the efficiency of the generator and all other elements of performance of the unit itself. It was presented as being the performance when new. The turbine data on the curves is actual quotation and

guarantee by the General Electric Company who manufacture the machines.)

The curves shown on page 20, herein, clears up the point as whether or not a modern turbine would be preferable to the old engine which is installed. (Loeb, p. 272, 273.)

The advantage of the turbine over the engine at low loads is greater by far, as the curves show. (This, of course, applies to the engine when it was new, and not in its dilapidated condition, (Franklin, p. 303). The engine is now much worse, (Loeb p. 264).

The Respondent insinuates that steam turbines are new devices, (Loeb, p. 271). It is a fact that turbines were installed more than twenty years ago and began to be very generally used more than fifteen years ago.

In view of the facts it is not clear why Respondent should claim that turbines cannot be operated economically to any greater extent than an engine, (Loeb, p. 277) particularly such an old time engine as the one involved in this case. (Also Loeb, p. 254.)

It may be noted, in connection with the performance curves on page 20, that if the Water Company does do its pumping with its own free water power instead of by electric power, bought in such large amounts and at such great expense, the load on this engine will drop to such a small value that its further operation would be ridiculous, owing to its poor economy at low loads. Respondent admits present load is not good, (Loeb, p. 273), for steam plant operation. (Also Loeb, p. 474.)

(2) Plaintiff further claims, that if a steam plant had been necessary, it should have been placed at the site of the Hydro-Electric Plant. By the removal of the unused and antiquated equipment in this plant there would have been plenty of room to place the necessary equipment. These changes as far as they effect the Hydro-Electric Plant have been de-

scribed on pages 62, 63, 64, 65, 66, under Accts. Nos. 115, 116, and 117. The elimination of the three 300 k.v.a. transformers in the generator room; (see "L," p. 79, also page 61, herein, also Item No. 1, Acct. 109, Respondent's Revised Valuation, page 5, Exhibit No. R-10); the removal of the old shafting, pulleys, belting, etc.; the removal of the over-sized 300 k.w. generator, and its replacement by a proper sized one in the water wheel house; the elimination of the unnecessary portions of the switchboard; and the removal of the junk in the shed back of the generator room, (where the present old boiler used for heating is now located), would provide ample space for the required turbine and boiler capacity In fact, it cannot be denied that much larger capacity might be installed if need be.

The operating economies resulting from this plan would have been enormous, as compared with the unbelieveable wastefulness from the present steam plant. In the first place there would have been no duplication of power plant labor costs. In a small plant of this kind this is a relatively big item. The supervision would be less. The cost of water for boilers and condensation would disappear because the Respondent's water right entitles him to water needed for boilers, etc. (In addition to the water power for the water wheels the Deed reads "and for further purposes of feeding boilers and other uses at the station of the party of the second part." (Deed Book No. 210, page 427, Recorder's Office, Bridgeton, N. J., Date of Deed, Jan. 27, 1892, Millville Manufacturing Co. to Millville Electric Light Co.) It is claimed by Respondent that no siding facilities were available for getting coal, yet it is a fact that the Millville Manufacturing Co. has siding facilities within a few hundred feet and these could be easily extended. The ownership of the Manufacturing Co. also owns a large interest in the stock of the Respondent. It is not to be supposed

that personal misunderstandings would prevent the accomplishment of such economies. It would not condemn the scheme even if the coal had to be hauled if the costs are compared with those encountered in the operation of the steam plant which was built. (Possibly the siding "difficulty" was like that of purchasing power in which there proved to be really no difficulty. (See page 82 herein.) Another fact is, that if the siding facilities could not be arranged for the plant should not have been built, as, indeed, it should not have been anyhow.)

(3) Again, if the plant had been needed, the Respondent could have and should have put in proper sized accessories and auxiliaries. (Such as boiler feed-pumps, exciters, transformers, etc., etc., which, due to age or size, have to be removed in a short time. Franklin, p. 303 and 304.) The installation of boilers of such age and previous history as were put in here is absurd, particularly at such costs as the Respondent has stacked up for them on its books.

Respondent offers figures as to cost of turbine plant which are not supported by any details but which are evidently for a plant two or three times the size of the plant such as involved here. It may be the figures included a lot of stand-by equipment, (Loeb, p. 451), but if so they are certainly not applicable nor reliable as an answer to the question which called for them. It must be remembered that this plant has only one main unit, and that is the old 500 k.w. unit.

Respondent says "the price would have been one hundred and forty-nine thousand dollars to have had a plant with a modern unit." Plaintiff submits, that if these figures include a lot of stand-by capacity; or, if they are for a single unit of several times the capacity of the plant in this case, the witness should have so stated. Paintiff further states that such figures as given by Respondent's witness must

have been for one or the other of the above Plaintiff absolutely disputes that a turbine plant of the same capacity and applicability as the steam plant involved in this case would have cost anywhere near such a price and submits below figures in detail, based upon actual quotations from the manufacturers in support of this fact.

(Performance of Turbine referred to below is shown at "A-A" on Curve Sheet, page 20 herein.)

Item	Cost, 1-1-23 Prices	Cost, 1916 or 1917 prices
Boilers, 2 300 h.p.,	$19,491	$10,400
Piping,	5,500	2,700
500 k.w. Turbo Generator with Exciter,	18,593	13,750
Switchboard Control Panel,	1,200	750
Station Wiring,	350	225
Condenser, Motors, and Pumps,	4,000	3,100
Cooling pond,	3,500	2,500
Stack and Flue Connection,	4,000,	2,500
Sub. Total,	$56,634	$35,925
Building, inc. Boiler Room,	7,500	5,100
Land,	1,000	1,000
Total,	$65,134	$42,025

The overhead cost added to each would bring the total to approximately $75,000 for the 1923 figure and $50,000 for the 1916 figure. All of the above are complete installed and the prices for labor are liberal, particularly as compared with those applying in Millville, N. J.

Respondent cites the lower cost of steam turbine generator as compared with the engine, (Loeb, p. 467), but apparently overlooks the fact that his quoted figure on the engine included the engine only, whereas his figure on the turbine included also the generator. He placed the cost of the turbine set at 64 per cent. of that of the engine. As the generator would add about $5400, to the engine cost the advantage, actual, of the turbine price is more apparent.

In this connection it should be stated that the turbine has many more advantages, some of which are as follows: operates at higher vacuum than is at

all possible with engine; and, therefore, much lower steam consumption, (See curves on page 20 herein); smaller boiler capacity; far less floor space; more compact station arrangement; smaller amount of piping; smaller condenser equipment, including motor, cooling system, pond, etc,; smaller station auxiliaries; smaller buildings; smaller and less expensive foundations; less coal consumed and smaller coal storage capacity; less power required to operate auxiliaries; less labor required for attendance, firing boilers, and coal handling; less lubrication; and less repairs.

All of the foregoing facts are well established by the experience of engineers and power companies extending over a period upward of fifteen years, and, at this time no consideration is ever given to the question of installing engines of the type located in the steam plant involved in this case.

On the other hand, turbines have for years been capable of continuous operation to such an extent, and are so reliable, as to have been almost uniformly adopted for power service. Their reliability and performance is such that they are now extensively used in marine service on trans-Atlantic and trans-Pacific vessels with absolute satisfaction, where absolute continuity of operation is vitally important.

The Respondent has not and cannot establish any fact in support of the claim, that a steam plant has been necessary at any time thus far in its history; nor, if a plant had been necessary the Respondent has not and cannot establish any fact that the construction of the existing steam plant, composed, as it is, of second hand, antiquated, delapidated, mismated, inefficient, and unreliable equipment, was warranted by necessity, wisdom, or even sane judgment or common sense.

In the face of the excessive costs of operation, including high repair and maintenance; and, in the face of the hopelessness of rejuvenating this exist-

ing steam plant into a successful proposition; and, in view of the fact that even if it were new, this type of engine would not show reasonable economy compared with modern equipment; also, by reason of the fact that there is not load enough to warrant the operation of even a high grade plant, and never has been in the Respondent's history, the Plaintiff submits that its claim that no portion of the steam plant is now, or ever has been a "Used and Useful" item of property, and therefore it should not receive any assignment of value in this case, nor should it be further operated by the Respondent.

In the Conference in connection with this case it was stipulated by the Engineer for the Plaintiff, and agreed to by those present and participating in the Conferences, that any applications of prices to the items of the steam plant inventory were in the abstract only, and that the same did not commit the Plaintiff to assignment of values to such items for the purposes of this case. (Temple, p. 489, 503, and 504.)

Under this same stipulation the following prices are applied to the items of the inventory of the steam plant.

PHYSICAL PROPERTY

BASED ON PRICES AS OF JANUARY 1, 1923.

(Item and page nos., where used, refer to Resp. Exh. No. 10)

	Cost New	Cost New Less Accrued Depreciation
Acct. No. 101, LAND.		
Irregular plot, 308 X 342 ft., (Resp. item 1, p. 4)	$2,500	$2,500
Acct. No. 109, POWER PLANT BUILDINGS.		
Concrete block building, (on three sides, temporary wood sheathing south side). See photograph, Exh. P-29, no service equipment,	10,017	8,014

Acct. No. 110, FURNACES, BOILERS AND ACCESSORIES.

	Cost New	Cost New Less Accrued Depreciation
2 Babcock & Wilcox boilers, nominally 400 h.p. each. Installed in City Hall, Philadelphia, 1897, and bought second hand by Resp. 1916, inefficient and in constant need of repair since installed in present location. (NOTE: These boilers were sold by City of Philadelphia in 1916 as "Old Material" for $207 each plus $6 for mud drums. Based on their high cost of repairs and poor efficiency and high operating cost, they should never have been installed and should now be retired. See Affidavit by William J. McKee herein.) (Also testimony Franklin, p. 304.)	26,066	2,607
2 Boiler Feed Pumps, one Deane and Worthington, both 12 x 7 x 10 inches. (These are both far too large for the duty here and therefore inefficient at the low loads imposed on them. Also they are both second hand and very old. Serial number on one goes back beyond available records. Now being removed from plant, (Franklin, p. 304) and replaced by smaller one. Price, actual quotation, on smaller pumps,	494	247
Automatic damper regulator, (as there is an automatic combustion control to perform this function this cannot, in the Plaintiff's opinion, be "used and useful.")	000	000
Feed water heater, Webster,	971	777
Automatic CO-2 recorder,	362	308
Stack, ¼ inch steel, 72 in. dia. by 100 ft. high, and flue connection, (Built up of old boiler shells).	3,776	2,643
Hot well, (so-called) actually sump,	73	51
Power plant piping, (does not include piping for automatic combustion control, nor that at cooling pond, both of which are figured in with these items), based on actual quotations,	6,000	4,800
Automatic combustion control, Gray System,	1,811	1,449
Coal conveyor,	653	653
2 Flow meters,	825	825
Total, Acct. No. 110,	$41,031	$14,360

	Cost New	Cost New Less Accrued Depreciation
Acct. No. 111, STEAM ENGINES.		
Rice & Sargent engine, (Resp. item no. 1, p. 11. Now over 20 years old and in delapidated condition as to physical and operating fitness. Has been seriously wrecked so many times since it was bought second hand and installed by Resp. in 1916 that its main frame is welded together in many places and bolted up in many others. So badly wrecked in 1921 that it cost over $10,000 to get it going again. Wrecked again in 1922 and repaired at an expense of many more thousand dollars. Started up finally in March, 1923, and after running a few hours was wrecked again. See Photographs P-28 and P-29; also P-31, part of this Exhibit for March, 1923, breakdown.) In the year 1920 the apportionment of the power sold from this steam plant was 859,311 k.w. hrs., and it cost $67,449.16 net, or 7.857 cents per k.w. hr. to produce this. In 1921 the apportionment sold was only 344,280 k.w. hrs., due to the inability of the plant to perform, and it cost $37,880.10 or 10.995 cents to produce this. The final repair figures for the last two breaks are not yet in hand. (For the two years given see Exhibit P-12, pages 24 and 27.) (In repairs and excessive costs of fuel, this unit has imposed upon the consumers of this Respondent enough excess charge for power to have set up a good plant if same had been needed.) (See 5x. P-12, pages 24, 27, and 29; also Exh. P-15.) Replacement cost new is a hypothetical one for the reason that it is not supposed any one would wish to reproduce such a unit as this new, (See curve sheet, page 20, herein),	25,000	00 000
High speed Ames engine, 12 x 12 in. (Much too large for the generator it drives, which in turn, is about four times too large for its duty in this plant. Engine and generator both so old records do not show exact age. Bought second hand January, 1917, (Franklin, p. 298). Of no use in this plant and therefore given no value by depreciation. (See testimony, Martz, p. 491.)	1,105	0000

		Cost New	Cost New Less Accrued Depreciation
2 Centrifugal pumps, size No. 8, 1340 g. p. m., 35 ft. head on base, (with motor listed otherwheres), based on actual quotations:			
For 2 pumps, delivered	$840		
Foundation,	144		
Erection,	30		
		1,014	862
Cooling basin, including all piping, fittings and nozzles,		3,959	2,806
Schutte-Koerting multi-jet condenser, No. 35½,		2,027	1,723
Vacuum trap, 1½ in.,		127	100
20 inch oil separator,		450	405
Oil supply system, Bowser,		550	495
Steam Engine Indicator and Planimeter,		210	210
Oil pump, 2 x 3 x 2 in.,		58	49
Total, Acct. No. 111,		$34,500	$6,862

Acct. No. 115, ELECTRIC GENERATORS.

500 k.w., 3 phase alternating current generator, slow speed, connected to Rice & Sargent engine, 6600 volts. (This machine is in its 21st year, same as engine. Has been through the wrecks which have occurred to the engine and its physical condition is indeterminate.) Bought second hand, 1916,		5,405	541
Exciter, 50 k.w. Eddy generator, (so old there is no record of date of manufacture), bought second hand, 1917. About four times too big for its duty and little used in this plant,		1,501	150
Motor generator set used as exciter, (bought second hand in 1921, made in 1904. Inefficient and much too large for its duty in this plant.)		1,855	371
Total, Acct. No. 115, Steam Plant,		$8,761	$1,062

Acct. No. 116, ACCESSORY ELECTRIC POWER EQUIPMENT.

Induction motor, 40 h. p., 220 volts, 60 cycles, 3 phase, 1170 r. p. m.,	$415	$370
Switchboard, 3 panels, 88 in. high by total of 56 in. wide. (Handles generator, exciters, and one outgoing circuit.) Has indicating and recording meters.) Price based on actual quotation,	1,700	1,360
3 25 k.v.a. transformers, 6600 volts primary, 220 secondary,	798	638
Electrolytic lightning arrestor, 3 phase with 3 horn gaps, 6600 volts, and 3 choke coils,	648	551
Station wiring,	750	600
3 300 k.v.a. transformers, 6600 to 2300 volts, (located at Hydro-Electric Plant. See under Acct. No. 116, page 64, of this Exhibit; see also page 79 herein, under "L.") Much too large in capacity, one to be cut out of service, in effort to reduce the excessive losses This will only partly correct the situation. As stated in above reference, the only proper thing to do is eliminate the 6600 volt portion of this power supply and change the present, small amount of 6600 volt load over to 2300 volts.	3,100	1,240
Total, Acct. No. 116, Steam Plant,	$7,411	$4,759

Acct. No. 117, MISCELLANEOUS POWER PLANT EQUIPMENT.

Items in this account located at steam plant, (Not separated by plants in Resp. Revised Valuation, Exhibit R-10, p. 18; but is so separated in Resp. original copy of 1922 Valuation, "D & Z." Report No. 1814, dated June 26, 1922, presented in this case at Exhibit No. R-11. See on p. 19 therein. See also under Acct. No. 117, bottom p. 66 and top page 67, herein.)	696	418

SUMMARY OF HYPOTHETICAL COSTS, STEAM PLANT, BY ACCOUNTS.

Account Number	Item	Cost New	Cost New Less Accrued Depreciation
101	Land,	$2,500	$2,500
109	Power Plant Buildings,	10,017	8,014
110	Furnaces, Boilers, & Access.,	41,031	14,360
111	Steam Engines,	34,500	6,862
115	Electric Generators,	8,761	1,062
116	Access. Elect. Equip.,	7,411	4,759
117	Misc. Power Plant Equipment,	696	418
Total Hypothetical Cost, Steam Plant,		$104,916	$37,975

MILLVILLE ELECTRIC LIGHT COMPANY

VALUATION AND RATE CASE

VALUATION OF PHYSICAL PROPERTY

Depreciation.

In determining Depreciation the Plaintiff has given careful consideration to age, physical condition, operating characteristics, and adequacy for each item, and fitness for the required duty.

For certain items there appears to be no serious disagreement as to depreciation between Plaintiff and Respondent. On other items there is more or less variance. The Plaintiff maintains, that in view of the facts in the Record in this case, the depreciation on all the items involved in this Valuation has been conservative, and has been fairly applied, as herein applied by the Plaintiff.

Many of the applications of depreciation as made by Respondent cannot be understood. For example, in account No. 109, Hydro-Electric plant, (p. 61 herein; item no. 2, p. 6, Exh. R-10), there is a water wheel shed, built more than 30 years ago and not in good physical condition. The expected life on such structures is from 30 to 40 years unless replaced by larger or improved buildings before that time. In Respondent's valuation made the latter part of 1919 and presented before this Commission during 1920 this item was depreciated 40 per cent., which was none too much, if enough. However, in Respondent's Exhibit R-10, above referred to, there is applied a depreciation of only 25 per cent., yet nothing has been done to the structure to change its condition

and more than three years have elapsed since the 40 per cent. was applied.

There are many other cases of the same kind noted after a study of the matter. One or two more may be cited. Acct. No. 116, Hydro-Electric plant, 3 300 k.v.a. transformers, (these are actually used in connection with power from the steam plant, see pages 64, 79 and 80 herein; also, item 1, p. 16, Exh. R-10), were given a depreciation of 30 per cent. in the 1919 valuation, 15 per cent. in the June, 1922, valuation, Exh. R-11, and in Exh. R-10 this depreciation is only 10 per cent. This particularly strange in view of the fact that one witness for Respondent claims these transformers are much too large and one must be eliminated in order to help reduce the excessive losses now imposed on the system, (Loeb, p. 275). Nothing has been done to increase or improve the condition of these transformers. They are more than three years older and therefore that much more deteriorated and one of them has to be cut off entirely. This does not appear to be a fair method of applying depreciation.

(Also in the same plant, Hydro-Electric, regulating transformers, raised from 85 per cent., 1919, to 90 per cent., R-10; also switchboard, same plant and account number, raised from 85 per cent., 1919, to 95 per cent., R-10; both of these items having grown three years older in the interim, and both having had their share of amortization accrued for these years.)

Again, the item of "poles," account no. 120, page 69, herein, (item no. 1, p. 18, Exh. R-10.) In 1919 a depreciation of 35 per cent. was applied to 1230 poles, in 1922, for 1431 poles a depreciation of 15 per cent. was applied, (Exh. R-11), and in Exh. R-10 for 1536 poles a depreciation of only 10 per cent. is applied. Respondent seems to have overlooked the fact that the 1230 poles in place in 1919 have passed through three more years of their life and suffered from the consequent deterioration.

Even such an oversight would not justify the decrease in depreciation as a result of adding the few additional poles since 1919.

There are many other items in this inventory which have been treated in the same manner as above described, with no apparent reason, and, the Plaintiff claims, with no justification. Line transformers, a large item, (raised from 85 to 95 per cent.), are included in this.

Besides the foregoing, the Respondent has applied the same depreciation to many other items as was applied for the same items in the 1919 valuation, also, the Plaintiff claims, without reason or justification. Manifestly such items of property have deteriorated at somewhat, and there is no particular charm or magic spell upon the property of this Respondent by which it can escape such depreciation as occurs to all such property all over the world. (Respondent's own claims do not seem to support the principles by which depreciation was determined.) (Franklin, p. 309.)

Plaintiff further states that if "age" and "expected life" alone had been considered, the depreciation applicable to this property would be far greater than has been applied in Plaintiff's valuation.

Below is a transcription of the affidavit relative to the sale of boilers in Respondent's steam plant, by the City of Philadelphia.

(Note: The original of this affidavit is attached to the "File Copy" of this Exhibit (P-31), sent to the Secretary of The Commission.)

TRANSCRIPTION

"Copy of Bills, Numbers 386 and 387, from "Bill Book" showing sales of old material by City of Philadelphia for year 1916. In files of the Department of Supplies, City Hall, Philadelphia, Pa."

DEPARTMENT OF SUPPLIES

Bill No. 386. Account of Bureau of Electrical.
Department of Public Safety.

Philadelphia, Pa., Nov. 16, 1916.

No. 386 Mr. Power Equipment Co.
to CITY OF PHILADELPHIA, DR.

ORDER	Item		
2908	Bid 3845	4 Babcock & Wilcox Boilers, 375 horse power each $207.00	$828.00
		1 cast iron mud drum, 12' long, 6" diameter,	6.00
Checks no. 2057 -64			$834.00

$225.00 $627.00 (3rd National Bank, See no. 387.)

DEPARTMENT OF SUPPLIES

Bill No. 387 Account of Bureau of Electrical.
Department of Public Safety.

Philadelphia, Pa., Nov. 16, 1916.

No. 387 Mr. Power Equipment Co.
to CITY OF PHILADELPHIA, DR.

ORDER	Item		
2908	Bid 3845	3 cast iron mud drums, each, $6.00	$18.00

The above is a true and correct copy of the Bills of Sale of the four old boilers removed from the power plant of the City Hall, Philadelphia, in 1916.

These boilers were sold as old material in accordance with instructions contained in letter of July 6, 1916, from Wm. H. Wilson, Director of Public Safety Department, addressed to Jos. S. McLaughlin, Director, Department of Supplies. Director Wilson states in his letter that the boilers were installed in the City Hall power plant in the year 1897. These records are now in the Purchasing Agent's Office which has succeeded the Department of Supplies.

(Signed) WILLIAM J. McKEE,
Clerk, City of Philadelphia, Purchasing Agent's Office.

Sworn to and subscribed before me this 30th day of December, 1922.

THOMAS J. McCORMACK,
Notary Public. (Seal)

Plaintiff submits that equipment which is two or three times too big for a given duty is "inadequate" and "unfitting" just as much as equipment which has been outgrown or is otherwise too small.

As has been shown in this case, such second hand, delapidated, oversized equipment has resulted in operating and maintenance costs that are utterly absurd. Some of it has cost more to keep going than new equipment would have cost, and Plaintiff submits that the application of depreciated values which are far in excess of the cost new, at present prices, of high grade modern equipment of proper size and capacity, is as wrong as though the Respondent had inventoried and valued items of equipment that were not installed at all.

"Overhead" Costs.

The Plaintiff claims that the record of the case shows there has, in fact, been no "engineering" ap-

plied in the construction of this property, except in part in connection with certain of the distribution accounts. If engineering had been applied the Hydro-Electric plant would have been more economical and would have given far greater output in kilowatt hours per year, (see references thereto in this Exhibit). If engineering had been applied there would have been no steam plant built whatever since none was needed. But, if a steam plant had been built, no such ridiculous aggregation of junk as is involved in this plant would have been assembled.

The Plaintiff, therefore, submits that high costs for "Engineering and Superintendence" are not applicable generally to the whole property, merely on an academic basis, any more than a value for a high grade piece of equipment not actually present, could be applied.

The foregoing statements apply also to the alleged value introduced by the Respondent under the heading of "Preliminary and Organization Costs," and "Administration Costs," (see p. 2, Resp. Exhibit R-10).

Summary, Physical Property Valuation.

A "Summary" of the value of this property, collected by groups or sub-divisions is as follows:

Group	Page (this Exhibit)	Valuation New	Less Depreciation
Hydro-Electric Plant,	66	$32,783	$16,874
Distribution, etc.,	73	112,017	85,212
General, (Accts. No. 107, 132, 133,	74	1,630	902
Total for Property "Used and Useful,"		$146,430	$102,988
1½% for Omissions and Contingencies,		2,196	1,545
		$148,626	$104,533
Preliminary, Administration and Engineering, 10% of $112,017,		11,202	8,521 (10% of $85,212)
Total,		$159,828	$113,054
Working Capital,		6,000	6,000
Total Value, Property "Used and Useful,"		$165,828	$119,054

"Working Capital consists of (a), a liberal allowance for material, etc., on hand to meet current maintenance and repairs; and, (b), a fair amount for operating expenses, based upon present output, for one month.

Respondent has applied the item of "going concern Value" in the valuation purely on an academic basis. Such value, when applied to a property, is considered to represent costs which may have been properly incurred in developing the growth of the business. The facts in this case are that this business has been actually suppressed for years. This would seem to be most extraordinary and even absurd, but it is nevertheless a fact.

Reference to the chart showing sales for several years back of 1916, which chart appears in Respondent's Exhibit R-11, will show there was little, if any, increase in sales for many years, indeed for all the early period shown in the chart. The excuse offered in the Exhibit, R-11, is that competition by the Gas Company, (also owned and controlled by the ownership of the Respondent), prevented a proper growth.

The real fact is, that up to the past few years it was practically impossible for a resident, or prospective consumer of this Respondent to get electric current either for power or lighting. At the time of certain inspections of the Respondent's property made by the Engineer for The Commission, Mr. H. E. Carver, in company with the Plaintiff's Engineer, in June of 1922, the question was asked of Mr. Wm. C. Buell, a general officer of the Respondent, (see Exhibits, P-30a, P-30b, and P-30c, showing Salary Account of Officers, 1919, 1920, and 1921; also list of officers, p. 50 of Annual Reports, inc. 1922 also Exhibit P-21), as to whether it had not been impossible for the public to get current for lighting and power in the previous years. Mr. Buell stated that he would not say it was exactly impossible but that

"taking on new customers was certainly discouraged."

It was this general situation that brought about the existence of so many small private or isolated plants of various kinds, in the community embraced by the City of Millville, to meet the needed requirements for lighting and power.

Far from being suppressed in growth by competition from the Gas Company, this Respondent's growth was, in fact, suppressed in order to promote the growth of the Gas Company, at that time far more profitable; and, this suppression was done by the Respondent's management itself, either as Gas Company management or Electric Company management. Both are the same.

This strange practice has not yet been discontinued, (Franklin, p. 387 and 388). Gen. Mgr. Franklin denies that the Caloris or International Glass Company were finally obliged to put in their own plant, but this, as he should have well known is not a fact. An excerpt from a communication to Plaintiff's Engineer from Mr. P. Freidrich, formerly General Superintendent of this company, states "In regard to the International Glass Co. power plant I wish to say that at the time when this plant was built the requirements were about 100 horse power which within the following years were increased to 150 horse power, for power alone, including no lighting so your estimate is about correct. This plant was built in the winter of 1918-19 and was placed in operation about April, 1919."

Photographs of portions of this plant are attached to page 34 herein. (On original copy to The Commission only, unless additional copies are required.)

The foregoing facts and the testimony referred to in this case indicate that this Respondent has not made even reasonable effort to promote the growth of its business in the past. The complaints it offers

as to small load are partly due to its absurd and excessive rates and partly to its attitude toward the public as outlined on preceeding page. (Also see testimony, p. 383, 392, and 402.)

According to the census of 1920, the population of the City of Millville was nearly 15,000 people. It is much increased at this time. There should be not less than 3,500 to 4,000 consumers on the lines of the Respondent and yet the Annual Report for 1922 shows there were but 1095 on December 31, 1922. The fact that there have been increases each month for some time past proves that the community is a profitable one and would yield tremendous growth if an equitable rate were established.

Respondent's witness refers to the fact that this Respondent is regulated as distinguished from an "industrial" which is not regulated. (p. 497). Plaintiff submits that this Respondent is also protected from competition, which the industrial is not; also, it is a fact that if this Respondent's business of selling electricty were on a competitive basis with such outrageously delinquent power plants and management as this record shows to be the case here, the Respondent would long ago have been wiped out of existence.

Plaintiff submits that the amount to be allowed on the value of this property for "Going Concern Value" should be zero.

The "hypothetical" costs of the steam plant which are summarized on page 69, herein, need not be repeated, and, for the reasons already given under the head of "steam plant" costs it is the claim of the Plaintiff such figures do not have any place in the totals of the value of this property.

Reference to the Chart, page 17 herein, also to facts on pages thereafter, show that there is not load enough to operate even a good economical steam plant. (It is not to be presumed the Respondent will waste around $30,000.00 in power for pump-

ing water by the Water Co. in an effort to create a load for a steam plant.) It is also shown, as above referred to, that the steam plant can never be "Used and Useful" because, even if it were new it is too antiquated in design to operate economically as compared with modern steam turbines. (See Curves Sheet, p. 20.)

Plaintiff submits that it would be unjustifiable and against public policy for such a "monstrosity" to be included in the value of this property.

The proper disposition of the so-called steam plant does not appear to the Plaintiff to present serious difficulties. From the testimony in this case it is evident that the alleged plant was, in fact, not built by the Respondent, but by a corporation known as the High Pressure Construction Company, (DeHuff, pages 515, et seq.), a concern formed for the purpose of digging ditches for gas mains of certain gas companies, (Franklin, p. 306), and, in the very nature of its inception, decidedly and remarkably unfitted to have any important part in the building of power plants, or any work of like character. This being the case, the Respondent should properly turn back the entire steam plant property to the High Pressure Construction Company for such purposes as the latter may see fit to make of it. (See Franklin, p. 307.)

(This High Pressure Construction Company has handled work for the Respondent for many years at extremely high profits, even if it were real engineering and constructive work. Plaintiff would refer to Exhibit P-11, page 6, which shows the Construction Company's profits to have been as high as 33 1-3 per cent. over all costs.)

The Plaintiff claims, and the record shows, the Respondent to have been seriously delinquent, in not having done this long ago, rather than to have done what it actually has done, namely, try to put the junk into going condition out of operating ex-

penses. (See Exhibit P-12, etc.) This applies to boilers, engine, feed pumps, exciters and practically every important item in the so-called plant.

From the record it would seem that the High Pressure Construction Company is nothing but a "percentage adding" concern. Most, if not all of its employees are also employees of the Respondent. (See Exhibits P-30a; P-30b; P-30c.) From each of these it is seen that the High Pressure Company does not even pay the salaries of Franklin and Wood who top the list. (Both Gen. Mgr. Franklin and Mr. Wood appear only on the payroll of the Gas, Water, and Electric Companies, in the Exhibits above referred to.)

Gen. Mgr. Franklin himself, states that for labor the time of the men on the regular operating or maintenance gangs of these Companies is merely apportioned by paper work. (Franklin, p. 306). From this it cannot be denied that the High Pressure Company does not, or has not in the past, assumed any risks such as a bona fide contractor would be required to assume. The High Pressure simply has a "hand out" from the Utility Companies.

To say the least, such a situation is a farce, and Plaintiff submits that disposition of the so-called steam plant, above presented is an entirely fitting and proper one. Plaintiff also submits that the maximum value this property can fairly take is: (from bottom p. 103). Replacement Value, New, $165,828; Less Depreciation, $119,054.

Comparison of Resp. and Plaintiff "Cost New," Hydro-Electric Plant.

The total value set by Respondent for the Hydro-Electric Plant Accounts is $73,873. This is comparable with Plaintiff's figures of $32,783 since it includes the same accounts. (See top of page 69, also page 103 herein.)

The differences in these two total "Replacement Costs, New" is accounted for as follows:

Acct. No.	Item	Plaintiff Cost New	Respondent Cost New	Difference
101	Land,	$431	$21,000	$20,569
108	Dams, Canals, etc.,	5,644	6,926	1,282
109	Buildings,	6,766	15,969	8,930
115	Generators,	4,362	8,593	4,331
116	Access. El. Power Equipment,	7,967	(17,045 less 3,100)** net, 13,945	5,978
	Total excess of Respondent over Plaintiff,			$41,090

**NOTE: Resp. total for Acct. No. 116, Hydro-Electric Plant is $17,045 which includes the three 300 k.v.a. transformers used as accessory to steam plant for transforming its power from high voltage, 6600, to the standard distribution voltage used by the Respondent on its lines, namely 2300 volts. (See pages 64, 80, and 97 herein.) The correction of $3,100 is applicable in order to get the proper value for items in Acct. No. 116 which form part of the "Useful" equipment at the Hydro-Electric Plant.

Reference to pages 59 to 68, inclusive, herein will show that Plaintiff's figures as above given are fair, liberal, and justifiable.

Acct. No. 101. Plaintiff submits that is not proper for Respondent to include land of no use to the Electric Company, particularly when same is used exclusively by some other Company, and no rental has ever been charged, according to the records. (See testimony pages, 482, 483, and 485.)

As to "Water Right," Plaintiff does not dispute either the existence or value of this, provided it be used, which, it cannot be disputed, so far in the history of this Respondent it has not been properly and to its full extent. (See pages 66, 67 and 68, also Chart, page 17, and following pages.) Respondent's claim that a pro rata allowance for this "Water Right" on the kilowatt-hour basis is the only proper one, and so treats it under the Heading of "Operating Expenses" later herein.

Acct. No. 108. Two of the three items in this Acct. were agreed upon, as understood by Plaintiff, but there seems to have been $250 added to one of

them above the agreed price, by Respondent, possibly through an error, (See page 60, herein, riveted flume.) The other difference arises from a difference in a cost of excavation in which the Plaintiff claims his figures are fair and liberal.

Acct. 109. Excess in Respondent's value under this Account arises from the inclusion of a lot of buildings which are of no use whatever to the Respondent and are not claimed to be so used. (See same references as given above under Acct No. 101, also pages 60, and 61, herein.)

Acct. No. 115. Respondent's excess value for this Account comes about through the application of a "New Cost" to a second-hand generator which is from three to four times too large for its duty. (See pages 62, 63 and 64, herein.) This would be unjustifiable, and against public policy, which is manifest on the face of it.

Acct. No. 116. Respondent's excess valuation for this Acct. appears to be confined to two items, switchboard and wiring. Plaintiff submits that the figures applied herein, (see pages 64, 65 and 66,) are fair and liberal for these items.

Plaintiff further submits that Respondent's total figure for "Replacement Cost New" of the Hydro-Electric Plant, namely, $73,873 shows an absurd "cost per kilowatt capacity." It is admitted that this plant has a capacity of 100 kilowatts, more or less. At the figure 100 kilowatts, the Respondent's "Value New" per kilowatt is approximately $734 which is certainly absurd. Plaintiff submits that its own figure, namely $32,783 corresponding to the above, will show a cost per kilowatt of approximately $328 per kilowatt capacity. Plaintiff submits that this is tremendously high. This is, in part, due to the fact that the Hydro-Electric Plant is in part a sub-station, and in part it is due to the fact that there is in the "New Cost" considerable equipment which, if the plant were actually being replaced at

this time, would never be included. The buildings would be smaller and cheaper ; there would be no such lot of shafting, pulleys, clutches, etc., as have been included by both Respondent in the "New Cost." (See pages 66, 67 and 68 herein). The above figures are exclusive of "Overheads."

Comparison of "Replacement Cost New" by Respondent and Plaintiff on Distribution and Other Outside Property. (For Accts. see p. 74 herein.)

Respondent's total "Cost New" for this portion of the property, Accts. Nos. 120 to 128 inclusive, is $117,834 as compared with Plaintiff's total of $112,017.

The differences are found to exist in four Accounts; namely, No. 120, arising from costs on the item of Cross Arms, (see pages 69, 70 and 71, herein). Plaintiff has priced this item on basis of actual quotations and, at the time this was done, understood the property contained nothing but fir cross arms. It was later found there is about 30 per cent. of these which are pine arms, and this would make the price lower. Plaintiff submits that the cost set up for this item herein is both fair and liberal; also,

Acct. No. 123, in which the Respondent sets up a higher valuation on the item Conductors. Plaintiff submits that the prices herein are based on actual quotations and are fair and reasonable; also,

Acct. No. 125, in which the prices on Electric Services installed up to January 1, 1922, were specifically agreed upon in the conferences. Unit costs were also agreed upon but seem not to have been actually applied in determining the cost for additions made during the year 1922. Plaintiff submits that it has applied these prices for this Account and that its figures are fair and reasonable; and,

Acct. No. 128, in which difference is found for only one item, namely, wire, in regard to which see under Account No. 123, above.

Comparison of Totals of Respondent's and Plaintiff's Valuations.

Exclusive of any so-called "Overheads" or "Indirect Costs" the totals for the value of the property, exclusive of the steam plant, which has already been shown by the record in this case to be unnecessary, (See pages 75 to 93 herein), are as follows:

	Replacement Cost New		Cost New Less Accr. Depreciation	
	Plaintiff	Respondent	Plaintiff	Respondent
Hydro-Electric Plant				
Accounts,	$32,783	$73,873	$16,874	$57,919
Dist. & Outside Prop.	112,017	117,834	85,212	196,488
Gen'l. Accts., 107, etc.,	1,630	1,630	902	1,102
Totals,	$146,430	$193,337	$102,988	$165,509
Omissions & Conting.,	2,196	5,800	1,543	4,965
Totals, Excl. Ovhd.,	$148,626	$199,137	$104,533	$170,474

In a comparison of the amounts under "Cost New Less Accrued Depreciation" as presented by Plaintiff and Respondent, bottom of previous page, the same elements of difference as described on pages 108 and 109, herein, would apply, except that the amounts involved would be the depreciated amounts.

The total amount of depreciation as shown by the Plaintiff will be seen to be about $44,000 while that shown by the Respondent is only $20,000, (slightly less than this figure).

It has been shown (pages 98 to 103 herein), that the methods and results thereof, used by the Respondent in the determination of depreciation are unfair, and unjustifiable in the face of the extreme age, antiquated design, and delapidated condition of this property. Furthermore, the Respondent has accumulated a large "Reserve of Accrued Amortization of Capital," (see Annual Reports to The Commission), which amounted to $69,504.78 up to the end of the year 1919 before the steam plant was set up as part of the Respondent's capital. (For the four

years preceding 1920 the steam plant construction was stated to be carried in the Acct. "Construction Work in Progress.") The balance set up in the "Accrued Amortization Reserve Fund" as of Dec. 31, 1922, is $91,415.43.

From the above it cannot be denied that the application of "Depreciation" on the part of Plaintiff has been most conservative, and extremely fair to Respondent.

On the basis of capitalization per kilowatt hour sold per year, all of the valuations are extremely high, including the Plaintiff's. The actual bona fide sales to the public in 1921 were 841,453 kilowatt hours. (Note: Does not include "sales" to Water Co. See Chart on page 17, also see bottom page 80, also page 81.) In 1922 these sales were 900,337 kilowatt hours. Taking the maximum of these, the capital in "cents per kilowatt hour sold per year" is as follows:

(Exclusive of Overheads, Going Concern Value, etc.)

	Plaintiff's Valuation	Respondent's Valuation
Cost New,	16.51 cts.	22.12 cts.
Cost New Less Depreciation,	11.57 cts.	18.93 cts.

This means, that with a capital charge totaling 10 per cent. there would be a charge of one-tenth of the above amounts which is too high for properties of this size and located in communities of the sort involved herein. (The 10 per cent. above referred to includes interest on value of property, depreciation or amortization reserve, etc., which are based on a percentage of the capital.) (Resp. figures would be increased slightly more than 15 per cent. by "Overheads.")

For properties in extensive communities, where the plant capacities are large, and the sales per year are also large, it will not be disputed that the capital per kilowatt sold per year will be approximately

5 to 6 cents. For communities of the size here involved this figure will run as high as 9 to 10 cents, particularly if the property has not been well developed.

With a reasonable rate in effect in the Respondent's case the sales would increase considerably and this would help to reduce the capital per kilowatt hour sold per year and the consequent capital charge per kilowatt hour sold. Plaintiff submits that there is no justification for such high figures as set up by Respondent, and claims value shown at bottom p. 108, herein, are fair values for the Respondent's property.

MILLVILLE ELECTRIC LIGHT COMPANY

VALUATION AND RATE CASE

OPERATING EXPENSES AND RATES

Operating Expenses.

The Respondent's operating costs are completely analyzed and graphically shown in Exhibit P-2. The "Unit Costs" appear in Part III at bottom of this Exhibit. They are shown, together with the lump sums involved, in Exhibit P-12 in tabulated form. The period covered by each of the above is from 1917 to 1922, first four months.

As will be seen, the production costs remained practically constant up to the year 1919, inclusive. (Had the Respondent shown even reasonable zeal and ordinary engineering judgment the improvements to the Hydro-Electric Plant (see pages 66, 67, and 68 herein), would have been affected prior to the above period and less power would have had to be purchased. This would have cut down the cost of production very greatly and saved the Respondent many thousands of dollars per year.)

With the introduction of the steam plant operation in 1920, after it was four years in building, rose to figures that were around four to five times the previous costs. The "Distribution," "Utilization" and "Overhead" costs of operation, shown below the reference line in Part III, Exhibit P-2, and on the even numbered pages of Exhibit P-12, have been high for a utility of this size and the character of its territory served, for all the years, compared with the similar "non-production expenses" of other utilities.

With the so-called steam plant closed down and the execution of the improvements referred to in the Hydro-Electric Plant the costs of production will be

found to compare favorably with those of the earlier years.

In the year 1922, during the progress of this rate case, costs for the "non-production" made a very material increase. This may be seen by reference to the Respondent's Annual Reports or to Exhibit R-8, in the column showing actual figures for 1922. (Third column from right.) For example, Distribution expenses, (Acct. nos. 440-454, nearest dollar), show a total of $6285 to which must be added $2168 which Respondent, this year for the first time, has placed in the Utilization Accts. (The make up of this $2168 is shown in letter from Gen. Mgr. Franklin in response to frequent requests for details of certain Accounts. This letter bears date of April 13, 1923, and is in the Minutes of the Engineering Conferences. Page 3 of letter shows, for Acct. No. 464, the labor item is divided as follows approximately:

Acct. No . 464, Inc. Str. Ltg., Rep. Lines, $1,400; Attention to lights, $790. There is also an item of Material for Rep. Lines, $554.

On Page 4, under Acct. 465, a labor item of $336 is to be split same as for the incandescent lighting, i. e. approx. ratio of 8-22 for attention to lights and 14-22 for Repairs, Lines. In dollars this will be $122 for attention to lights and $214 for Rep. Lines. The resulting total for repairs is therefore,

	$1400
	554
	214
	$2,168

From above it is seen Respondent stacks up a total of $8453 for its 1922 Distribution Accounts.

The total for Utilization is $7456, less the $2168 gives a net figure of $5288.

Commercial Administration, (Acct. No. 470), and Business Promotion, (Acct. No. 475), do not

show an increase as a total and they are not unreasonable in their amounts but are plenty large enough.

The total for General and Miscellaneous Expenses, (Accts. Nos. 481-492), has been showing great increases in the past two or three years and in 1922, has reached the figure of $18,317. (Error in Resp. total, these Accts., year 1921, Exh. R-8, gives $12,510. Should be $13,052, see Ex. P-12.)

There are certain items, also, in the Production Accts. for 1922 which have shown disproportionate increases over previous figures. An analysis of the accounts under Operating Expenses for the year 1922 shows that they are practically all much too high as compared with similar costs for other companies which are comparable with Respondent, and, some of the alleged costs are so high as to be ridiculous and absurd.

It was the impression of Plaintiff's Engineer that there was agreement as to the excessive character of some of these "Costs" as they were taken up in the Conferences but in the two columns toward the right hand side of Resp. Exh. R-8, there seems to have been no modification made except in regard to certain alleged economies in the steam plant; yet these right hand columns purport to show possible economies. There was admission that increased output from Hydro-Electric Plant would result from use of proper sized generator there, but the revised columns show only improvement from synchronizing the present over-sized generator which must operate at far lower efficiency than a proper sized machine would perform at.

It was understood there was also admission about certain other items, for example, Acct. No. 401, Labor, Hydro-Electric Plant, was thought to contain too large an amount for superintendence, (this being duplicated); and, certain of the items in the details as given by Gen. Mgr. Franklin in his

letter of April 13, 1923, already referred to, were thought to be too large and not proper.

Plaintiff submits that the following items of Operating Expense for the year 1922 are improper and unjustifiable for the reasons stated below; and, further submits that such "costs" should not properly form the basis for determination of Operating Expense in the future:

Hydro-Electric Plant Accounts.

401, Labor. Portions of time of two men in supervisory capacity now charged to this plant; one should be sufficient, if effort were honestly made to reduce this item of expense there could be a reduction in the force for one shift at least, indeed this should be possible for two of the three shifts, even if it were necessary to pay a little higher rate to the one man remaining, per shift. With no steam plant to bother with, and whether the improvements in the equipment in the plant are made at once or not, there should be a reduction in the Labor item of not less than $400 to $425. This item should not exceed $4800 per year. (Many plants of this type have recently come to be operated on a strictly automatic basis, with no "labor" in attention at all. It is realized that with the sub-station portion of this plant to be attended to, at least one man should be in attendance.) The figure, $4800 per year is liberal for this item in the plant.

403-c, Lubricants. This item will run much smaller when the improvements referred to herein, (p. 66, 67 and 68), have been made because of less shafting, pulleys, etc., and because of a smaller machine. Should not exceed $100 per year.

403-d, Station Supplies and Expense, as shown by detailed table which was supplied prior to letter from Gen. Mgr. Franklin, for use of conference, (which, like the letter, is also a part of the Minutes

of the Conference), contains several items and amounts which are not properly included; namely, coal, $625.89, (used for both Water and Electric Companies), if properly apportioned should not exceed $300 in its cost to Respondent; also, duplicate Electric Charges, (for power used in plant, 15,092 k.w. hrs. at .05, $754.60), should not be here at all. This simply raises the apparent cost of Hydro-Plant operation by the above amount, which is later deducted as a part of Miscellaneous Adjustments. It may be noted that the power used in the steam plant was not so treated. (There was used in steam plant, in 1922, 391,481 plus approximately 20,000 k.w. hrs. or a total of 411,480 k.w. hrs. At same charge this would have been $30,574 added to this Acct. in the steam plant operating costs and to the total of the steam plant. It is not proper to add it either place but it is certainly a strange procedure to add it in the Hydro-Electric Plant alone, and not also in the steam plant); also, items included in this Acct. in error to the amount of $151.44; beside this Miscellaneous Labor does not belong here. There is enough labor already provided for to meet all the requirements of the plant.

411, Repairs to Station Buildings. Respondent has separated this item only since 1918, in its Reports to The Commission. For 1918 the amount was $4.97; for 1919, $15.03; for 1920, $30.03; for 1921 and since these proceedings began the before The Commission this Acct. has increased to, in 1921, $238.19; and in 1922, $576. If these figures include repairs to buildings used by the Water Co., it is submitted by Plaintiff, that these charges are improper. Whether other buildings are included or not, it is submitted further than from $100 to $150 per year is a liberal sum for repairs on these buildings used for electric purposes. In view of the age of the buildings the larger of the above is considered liberal and

fair. (Note: No details were supplied by Resp. as to what was included, though same were asked for.)

413, Repairs to Hydraulic Equipment are shown as $193 in 1922. From records in for previous years, judging from the character of the equipment in this plant, it is thought by Plaintiff that this is small as an average for this Acct. Plaintiff believes the sum of $350 per year should be allowed as a liberal sum for this Acct.

415, Repairs to Electric Equipment, was supplied in some detail in the letter already referred to and is found to be absurdly high. This will be seen at once upon reference to the detail in the Minutes of the Conference, under Acct. 415, pages 2, and 3, of Gen. Mgr. Franklin's letter. (See also stenographer's record of "Comments on Account 415, by W. E. S. Temple. Details Submitted by Company, Total of Which is $1212.00," which is also in the Minutes of the Conference.) With the old equipment in this plant, largely second hand, it is unfortunately necessary for high repair expense, and it is for this reason and for better operating economy that better equipment is really cheaper in the long run. As set forth in the statement above referred to, the expenditure on repairs in 1922 would more than half pay for new machines. In fact, it would entirely do so in connection with the salvage return from sales of old machines. In 1920 the repairs were high, also in 1921, (See Exh. P-12), and this should prove to Respondent the wisdom of putting in proper machinery. (The increase in output to the value of many thousand dollars per year is of course, the greatest reason for the improvements.) The cost of Repairs in this plant with proper equipment would not exceed $150 to $200 per year, which is the maximum, Plaintiff submits, allowance under this item.

Total Hydro-Electric Production. Although Respondent's Engineers in the course of the Conferences, it was understood, agreed that some, at

least, of the above "Costs" as set up by Respondent, were not proper, it does not appear that any modifications were made when the columns showing "Economies Possible" in Exh. R-8, were prepared. Plaintiff submits that Respondent's figures do not, in fact, show the economies that are possible and that should be made if these properties are to be able to operate on a basis that shall permit them to grow and meet fair market prices for the commodity of electric light and power which they wish to sell in the community here involved.

Steam plant operating accounts are not treated of herein for reasons already stated, and because of facts in the record of this case. It cannot be disputed that, without the Water Company being sacrificed by causing it to buy large blocks of power, (See Chart, p. 17 herein), at annual charges totalling around $30,000, (See Exh. P-16, also pages 80-82, herein), there is not enough load for even a first class plant. Even in 1922 when the Water Co. helped out by buying 629,710 k.w. hrs. the load was not proper for the steam plant. This is emphasized by Respondent's own witness, Loeb, pages 473 and 474, says, "Here the company has a favorable condition due to the generation of part of its requirements by a hydro-electric station without the consumption of fuel and it must make up the remainder of its requirements with a very poor load factor, a very poor set of operating conditions."

In the discussion herein, of the steam plant, pages 75-93, Plaintiff has called attention to the facts in this case which prove out of the mouths of the Respondent's own witnesses, that the further operation, or attempts at operation, of this unfortunate aggregation of delapidated second hand equipment, can only bring financial distress upon the Respondent in the future as it has, indisputably, in the past. This old lot of junk has cost more than enough to build a first class plant, if one were needed,

which it is not. (See Exh P-12, pages 24, 25, and 29, also Exh. P-15, page 31, and P-20, page 39.) It may be possible to insure the Respondent from indemnity for loss of life or property from further wreckings of the old engine but they can never be insured against the tremendous unit costs of production this plant must show. (It should be noted that the wreck of the engine which occurred in March of 1923, stated to have been March 15, 1923, part of the engine flew out the window in the corner of the plant. (See Photograph "C" which forms part of this Exhibit. One copy of this only along with Original of Exhibit to The Commission, other photographs may be furnished if necessary).

It should be further noted that the sale of steam to the Gas Company, (same ownership and control as that of Respondent, also same management), is in a sense, a farce. Respondent's Engineers indicate this has entailed a loss of $19,000 during the first two years it was done, (See Report on the Property by Day & Zimmerman, 1922, Exh. R-11.) The loss on the same business in 1922 is stated in Exh. R-8 to have been around $8,400. (See opposite "Sale of Steam" under Operating Revenue, in Exh. R-8.) By other methods; namely, the application of the exact plan used by Resp. to determine proper cost to Gas Co. for the steam, after correcting for the error in a steam meter, (Loeb, p. 261), which, according to Respondent, was showing reading approximately 100 per cent. in error, (Loeb, p. 262), the charge for this steam would be still higher. (About $14,000 in excess of the actual charge for it in 1922.)

It is apparently rather difficult for the management of the Gas Co. to bargain with itself as the management of the Electric Co., the Resp., in this matter and arrive at a conclusion that seems fair to the Respondent. The record shows clearly that this loss from the sale of steam has, thus far, totalled between $28,000 and $30,000. With the steam plant shut

down as far as production of electricity is concerned, due to reasons already fully presented, there should certainly be no further steam sales by Respondent to the Gas Co. and these absurd losses would then be discontinued.

Distribution Expenses, Accts. Nos. 440-454. As already seen from p. 115, herein, the aggregate "Cost" for this group of Expenses as set up by Respondent is $8,453, ($6,285 of which is under the heading "Distribution Expenses" and $2,168 of which is embodied in with the "Utilization Expenses," under the color of being "Repairs to Lines." Plaintiff submits that, 1st., the apportionment of these so-called line repairs is not in proportion to the amount of line involved, and that the figure set up in the "Utilization" Accts. is more than twice as high as such apportionment would show, if same were proper anyway, which Plaintiff claims it is not. The result of this is that the "Utilization" Accts. are being charged with repairs that are being made on lines to other customers, or perhaps repairs to some of the Respondent's own trunk lines which do not serve any particular part of the public consumers; and 2nd., it is impossible and improper to attempt to segregate repairs such as are made to a net work of distribution lines over a congested territory so compact and interlaced as is the one here involved, for the reason that such separation cannot be intelligently and properly and fairly made, even by the most elaborate system of accounting, which Respondent will surely not claim is used in this Company. It must be noted that, Respondent clearly states, (See letter from Gen. Mgr. Franklin, April 13, 1923, page 3), that this sum which totals as closely as may be determined from the letter, $2,168 is for the expense of repairing the lines. The form of the statement conveys considerable doubt as to the correctness of the amounts and refers to the amounts as a "proportion." As to the kind of equipment involved in the repairs, however, it leaves no doubt, because

it specifically mentions that it is for repairs on "poles, cross arms, wire, etc., etc." Plaintiff submits that it is impossible for accurate, or even approximate, apportionments to be made on such matters by Respondent; also, 3rd, even if it were possible for such segregation to be fairly and accurately made it is improper for it to be done. A piece of trouble on one consumer's line might cause trouble on that of another. Both would have to be fixed and neither could be properly apportioned. Again, Respondent cannot, and does not try, to segregate distribution charges between other individual consumers. Yet it would be no more absurd to try to do so, Plaintiff claims, than to try to do this.

If such a segregation is made at this time, for the first time in the Respondent's history, which is the case, (Franklin's letter states, "In previous years we did not charge to the Municipal Account the expense of repairing the lines, as we placed same with Distribution expense, * * *"), and if it is an estimated amount, as it must necessarily be, and if it should be with a view of showing excessive "Utilization Expenses" in connection with rates for street lighting service, then, it is Plaintiff's claim, this sum of $2,168 cannot properly be included in the "Utilization Expenses."

Reference to totals for Accts. Nos. 440-454 in preceding years show that the figures for 1921 and 1922, during the period of this Rate Case before The Commission, are far higher than will be required as an average and proper yearly amount. Comparison of similar costs in other Utilities of the character here involved bear this out most forcibly. Plaintiff submits that there must be elements of cost in the 1921 and 1922 totals that are not proper and defensible, perhaps excessive "automobile" charges or other similar alleged expenses.

Plaintiff submits that based on such costs in other similar well managed and well maintained

properties, also based on the Respondent's own figures for previous years, the total for Accts. 440 to 454 inclusive should not average more than $5,500 to $6,000 per year, also in applying $6,000 per year, Plaintiff is liberal.

Utilization Expense, Accts. Nos. 464 and 465. Municipal Street Arc and Incandescent Lamp Maintenance. Respondent's make-up of the amounts for these Accts., as based on Gen. Mgr. Franklin's letter of April 13, 1923, and the table of details, referred to on page 118, herein, is as follows: (Accts. Nos. reversed in both letter and table by Resp.)

ACCOUNT NO. 464, ARC LAMP MAINTENANCE FOR 1922.

(Respondent's Figues)

Labor, (total $336.12, split between "Repairs to Lines" and "Attention and Inspection" as per page 3 of letter, see page 39 herein), Attention and Inspection, trimming, etc.,		** $122.00
Electrodes,		188.50
"Shades," (outer and inner globes),		49.60
Repairs—Lamp Hangers,	$61.00	
Magnets,	92.10	
	$153.10	153.10
Miscellaneous,		29.11
Sub-Total,		$542.31
Auto Expense,		202.68
Labor, (refer to this item above), "Repairs to Lines,"		214.00
Sub-Total,		$958.99
Locks,		18.91
Total,		$977.99

**NOTE: The $122 is nearest dollar, therefore total at bottom does not check in "cents." Actual figure for total is $978 as reported.

ACCOUNT No. 465, INCANDESCENT LAMP MAINTENANCE FOR 1922. (Respondent's Figures)

Labor, (Refer to this item above Acct), Attention and Inspection,	***$790.00
Lamps, (renewals),	1,755.96
Repairs, (lamp sockets, etc.,)	198.35
Miscellaneous,	69.91
Sub-Total,	$2,814.22
Auto Expense,	1,665.61
Sub-Total,	$4,479.83

Labor, (Refer to this item above, "Repairs to Lines,	***1,400.00
Material, (Refer to Franklin letter and p. 116, herein), "Repairs to Lines,"	554.30
Sub-Total,	$6,434.13
Locks,	45.11
Total,	$6,479.24

NOTE: Items marked (***) are nearest dollar, therefore total at bottom does not check exactly. Actual total reported is, $6,478.81.

Based upon comparisons with other Utilities and upon proper costs for such items, the above figures are high. Some of them are so high as to be absurd. It was found by referring the matter back to Respondent's management, through the medium of its representatives in the Conference, that the electrodes for the arc lamps and the lamps for renewals on the incandescent system, as they appear in the above items, were, in fact not those used on the system in 1922, but were the costs for certain purchase quantities during the year.

Plaintiff submits that unless the current controlling equipment for system were in very bad condition, no such quantities of either electrodes or renewal lamps could be used on the system concerned in the space of one year, except through wastefulness in its management.

Reference to first portion of stenographic record of "Comments by W. E. S. Temple," * * * * * (referred to on p. 120, herein), in the Minutes of the Conferences will show that some of the regulating equipment is not in standard condition and therefore not sensitive in its current control.

The total number of incandescent lamps involved in the "Lamps" item, Acct. No. 465, was nearly 1600. A revised estimate of the actual number used in 1922 was later supplied by Respondent, as 1452. It is the understanding that Respondent "charges out" such material as soon as purchased, and does not keep actual stock room records of usage in de-

tail, day by day. This, Plaintiff submits is not commendable because it is poor economy.

From the above it is seen that the system used slightly less than 2½ lamps for renewal per year per lighting unit, based on number in use January 1, 1923.

The item of "Repairs to Lines" has been discussed, Pages 122, 123, herein, and in the face of the facts it will not be disputed, this item has no place in the "Utilization Expense" Accts.

Particular enquiry was made of Respondent, through its representatives in the Conference, as to the item of "Automobile Expense" but the only information received was "This item Mr. Franklin will elaborate on." (See details, bottom p. 3, Gen. Mgr. Franklin's letter of April 13, 1923, in Minutes of Conferences). Plaintiff submits that such a charge for this item is absurd. Silence on the part of Respondent's management, in the face of repeated requests for the information as to what it covers, would seem to indicate the Respondent may also question the item.

Operating costs which are fair and liberal for "Utilization Expenses," Accts. Nos. 464 and 465 are submitted by Plaintiff in the following table in detailed form. These are based on actual quotations and experience.

30 20 10

ANNUAL MAINTENANCE COSTS—ACCOUNTS 464 AND 465, (DOLLARS)

Kind of Unit and Number of Each	Renewal Lamps Each per Unit	Renewal Lamps Total	Att'n, Insp. and Cleaning, etc. per Unit	Att'n, Insp. and Cleaning, etc. Total	Repairs, Globes, etc. Per Unit	Repairs, Globes, etc. Total	Total Annual Costs per Unit	Total Annual Costs Total
Arcs 29 *	.15⅓	4.60			r1.60			
**	.90	.90			g2.00			
	5.50	159.50	3.60	104.40	3.60	104.40	12.70	368.30
Add for 3 mercury rectifier bulbs @ $28.00 each,							2.90	84.00
				Total of Account 464			15.60	452.30
c. p. Quant.								
60 292	.71	1.77½ 518.20	1.25	365.00	.50	146.00	3.52½	1,029.20
100 175	.82	2.05 358.75	1.25	218.75	.50	87.50	3.80	665.00
250 118	1.60	4.00 472.00	1.25	147.50	.50	59.00	5.75	678.50
400 8	2.31	5.77½ 46.20	1.25	10.00	.50	4.00	7.52½	60.20
600 2	2.84	7.10 14.20	1.25	2.50	.50	1.00	8.85	17.70
TOTALS,	Renewals,	1,409.35	Att'n.	743.75	Rep., etc.,	297.50	Acct. 465,	2,450.60

NOTE: Under Arcs, (*) is unit cost for lower electrodes, number per year is 27 to 30 depending upon how carefully trimming periods are spaced. Maximum is 30 which is used above. (**) is for upper electrode of copper, life is from 4200 to 4500 hours per year actual, use of one per year figured on above. For incandescent lighting units, renewals per year used above is 2½ lamps per unit per year, which is slightly in excess of Respondent's actual records for this system and is liberal allowance. (In Arc column, "r" is repairs, and "g" is for globes.)

A comparison of Plaintiff's figures above, with those of Respondent as shown on page 125, herein, show that the chief difference is in the item of Renewals. Plaintiff has figured the item of Renewals on the basis of actual prices with the application of the discount of 29 per cent. off list to which Repondent would be entitled in these purchases, and which, according to statement of Mr. Buell before the members of the Conference, Respondent is receiving. It will be noted that the Respondent's cost for Renewals is not actually based on usage of lamps for this purpose in 1922, but on lamps which were purchased, which numbered considerably more than those used. (See p. 128.)

Respondent's item of "Automobile Expense" given as $1,656.61, under Acct. 465 and $202.68 under Acct. 464, Total, $1,868.29, is indefensible and excessive and out of all proportion to the requirements of the situation. In the inspections of the street lighting system it is not improper that an automobile truck be used. In this case Respondent used a small "Ford" truck, and the distance traveled cannot properly exceed 60 to 80 miles per week. This would provide for complete inspections of the system three times per week, or every other night except Sunday, which is most adequate to maintain all the lighting units in good going condition. This would mean approximately 4,000 miles of automobile travel per year. In this sort of service the costs of operation of such a vehicle could not possibly exceed 10 cents per mile at the outside, for all items involved, including fuel, tires, maintenance and depreciation, insurance, licenses and housing. (The driver is also the man who inspects, cleans, and generally attends to the lighting units.) It will not be disputed that such an allowance as stated, 10 cents per mile, is from one and one-half to two times what a small "Ford" truck will show for the costs of operation.

A proper apportionment between Arc and Incandescent maintenance would be $380, to Incandescent, (Acct. 464), and $20 to Arc, (Acct. 465).

Totals for these Accts. will then be:

Acct. No.			
464,	Arc Lamp Maintenance, (from p. 45 herein),		$452.30
	Automobile Expense,		20.00
	Total, Account 464,		472.30
465,	Incandescent Maintenance, (p. 45),		2,450.60
	Automobile Expense,		380.00
			2,830.60
	Total, "Utilization Accounts,"		$3,302.90

The power requirements for the Municipal Street Lighting system are shown in detail in the following table. The figures given are based on actual average values for the size of lamps called for on the system. The line losses for both arc and incandescent circuits are based on scaled lengths of conductor for each circuits totalled to the inventory. Transformer losses applied are conservative. (Only 88 per cent. was used for the rectifier set on the arc circuit.)

Power is figured at 2 cents per kilowatt hour at the switchboard. With the application of the economies outlined herein this power cost can be somewhat lowered. It must be remembered that this figure applies to the power lost in the distributing circuits as well as the street lighting units. For other consumers, power is paid for as it is metered at the point of consumption and does not include the line losses. The ratio of switchboard watts to lamp watts in the arc circuits is found to be 1.15. If the rectifier were in proper shape (See Acct. No. 116, p. 64, herein) this ratio would be lower because the efficiency would be higher.

For the incandescent circuits the ratio of switchboard watts to lamp watts is 1.137.

ANNUAL POWER REQUIREMENTS, MUNICIPAL LIGHTING SYSTEM.

Kind of Unit and Number of each		Average Watts per Unit At Lamp	At Switchboard	Kilowatt Hours per Year, at Switchboard per Unit	Total	Cost of Power Year per Unit	Total
c. p. Arc	Quant. 29	310	356.5	1,426	41,354	$28.52	$827.08
Incandescent							
60	292	44.22	50.25	201	58,692	4.02	1,173.84
100	175	66.0	75.05	300.2	52,535	6.00	1,050.70
250	118	150.48	171.1	684.4	80,759	13.69	1,615.42
400	8	*232.0	264.1	1,056	8,448	21.12	168.96
600	2	*332.5	378.2	1,514	3,028	30.28	60.56
Totals for Incandescents,					203,462		$4,069.48
" " "			and Arcs,		244,816		4,896.48

The following tabulation, compiled from the facts shown in the table showing Annual Maintenance Costs, Accounts 464 and 465, given on page 128 herein, and the power costs as shown above, gives the total cost of operation, including power, for each size of unit which comprises the street lighting system. The table also shows the revenue per lighting unit based on the contract prices which were in force from February 1, 1916, to same date, 1921. Since the latter date the City of Millville has been paying for the service under the same prices, by an arrangement which does not prejudice the rights of either the City or the Respondent as to the possibility of more or less money being due.

The table below also shows the gain to the Respondent on the basis of the operating costs herein set up, which, Plaintiff are both liberal and fair.

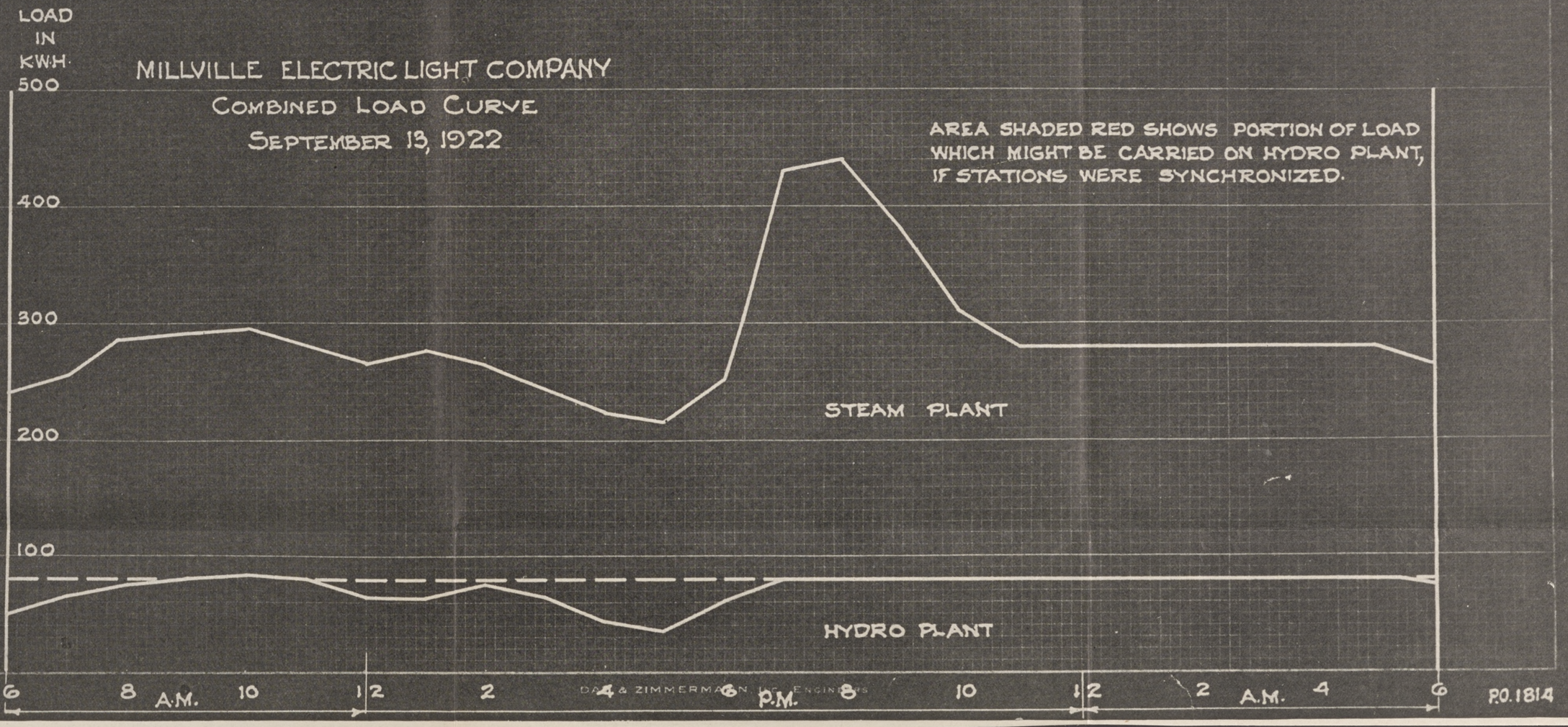
ANNUAL SUMMARY OF STREET LIGHTING REVENUE, EXPENSE AND GAIN. (DOLLARS)

Kind of Unit and Number c. p.	Quan.	Revenue, Expense & Gain, PER UNIT: Accts. 464 or 465	Power	Total	Revenue	Gain	Revenue, Expense and Gain, TOTAL: Accts 464 or 465	Power	Total	Revenue	Gain
Arcs	29	15.60	28.52	44.12	55.00	10.88	452.30	827.08	1,279.38	1,595.00	315.62
60	292	3.52½	4.02	7.54½	15.50	7.95½	1,029.20	1,173.84	2,203.04	4,526.00	2,322.96
100	175	3.80	6.00	9.80	18.00	8.20	665.00	1,050.70	1,715.70	3,150.00	1,434.30
250	118	5.75	13.69	19.44	27.00	7.56	678.50	1,615.42	2,293.92	3,186.00	892.08
400	8	7.52	21.12	28.64	38.00	9.36	60.20	168.96	229.16	304.00	74.84
600	2	8.85	30.28	39.13	48.00	8.87	17.70	60.56	78.26	96.00	17.74
Total—Incandescent Units only,							2,450.60	4,069.48	6,520.08	11,262.00	4,741.92
" —Arc and Incandescent Units,							2,902.90	4,896.56	7,799.46	12,857.00	5,057.54

MILLVILLE ELECTRIC LIGHT COMPANY

COMBINED LOAD CURVE

SEPTEMBER 13, 1922



DAY & ZIMMERMAN, INC. ENGINEERS

P.O.1814

MILLVILLE ELECTRIC LIGHT COMPANY

CHART SHOWING DIVISION OF METERED PRODUCTION BY SOURCES AND AMOUNTS SOLD, LOST AND USED BY THE COMPANY FOR THE YEARS 1917 TO 1922 INCL.

DAY & ZIMMERMANN INC
ENGINEERS
NEW YORK PHILA. CHICAGO

K.W.H.
2,500,000
2,250,000
2,000,000
1,750,000
1,500,000
1,250,000
1,000,000
750,000
500,000
250,000

1917: PURCHASED 73.6% · SOLD 88% · HYDRO 26.4% · LOST 11% · 1%
1918: PURCHASED 67.8% · SOLD 93.6% · HYDRO 32.2% · LOST 5.4% · 1%
1919: PURCHASED 60.2% · SOLD 87.4% · HYDRO 39.8% · LOST 11.5% · 1.1%
1920: PURCHASED 31.2% · SOLD 81.7% · STEAM 47.2% · HYDRO 21.6% · LOST 11.6% · USED 6.7%
1921: PURCHASED 42% · SOLD 75.9% · STEAM 32% · HYDRO 26% · LOST 11.6% · USED 12.5%
1922: PURCHASED 6.2% · SOLD 65.2% · STEAM 70.6% · HYDRO 23.2% · LOST 15.2% · USED 19.6%

8 MONTHS ACTUAL AND 4 MONTHS ESTIMATED

P.O. 1814

MILLVILLE ELECTRIC LIGHT COMPANY

CHART SHOWING ENERGY SOLD USED AND LOST AND PRODUCTION COSTS CLASSIFIED BY ACCOUNTS

K.W.H

2,500,000

2,250,000

2,000,000

1,750,000

1,500,000

1,250,000

1,000,000

750,000

500,000

250,000

1922 BASED ON ACTUAL OPERATING RESULTS

METERED PRODUCTION

PURCHASED 6.2 %

HYDRO GENERATION 23.2 %

STEAM GENERATION 70.6 %

METERED USE AND LOSSES

SALES 65.2 %

DISTRIBUTION LINES 6.1 %

DISTRIBUTION TRANS. 4.8 %

POWER TRANS. 3.5 %

LIGHTS 1.4 %

AUXILIARIES 18.5 %

TOTAL LOSS 15.2 %

BLEACHERY .08 %

8 MONTHS ACTUAL

4 MONTHS ESTIMATED

1922 GIVING EFFECT TO POSSIBLE ECONOMIES

METERED PRODUCTION

PURCHASED 6.5 %

HYDRO GENERATION 24.2 %

STEAM GENERATION 69.3 %

METERED USE AND LOSSES

SALES 68.0 %

DISTRIBUTION LINES 6.4 %

DISTRIBUTION TRANS. 5.0 %

POWER TRANS. 3.5 %

LIGHTS 1.4 %

AUXILIARIES 15.8 %

TOTAL LOSS 14.8 %

BLEACHERY 0.9 %

$

90,000

80,000

70,000

60,000

50,000

40,000

30,000

20,000

10,000

1922 PRODUCTION COSTS CLASSIEIED BY ACCOUNTS

STEAM PLANT

411-412-S 415-416-S (REPAIRS)

403-S

STEAM SOLD

402 (COAL)

NEW PRODUCTION COSTS

401-S (LABOR)

HYDRO PLANT

PURCHASED

419

411-413-H 415-H

403-H

401-H

1922 PRODUCTION COSTS CLASSIFIED BY ACCOUNTS GIVING EFFECT TO POSSIBLE ECONOMIES

STEAM PLANT

411-412-S 415-416-S (REPAIRS)

403-S

STEAM SOLD

402

NEW PRODUCTION COSTS

401-S

HYDRO PLANT

PURCHASED

419

411-413-H 415-H

403-H

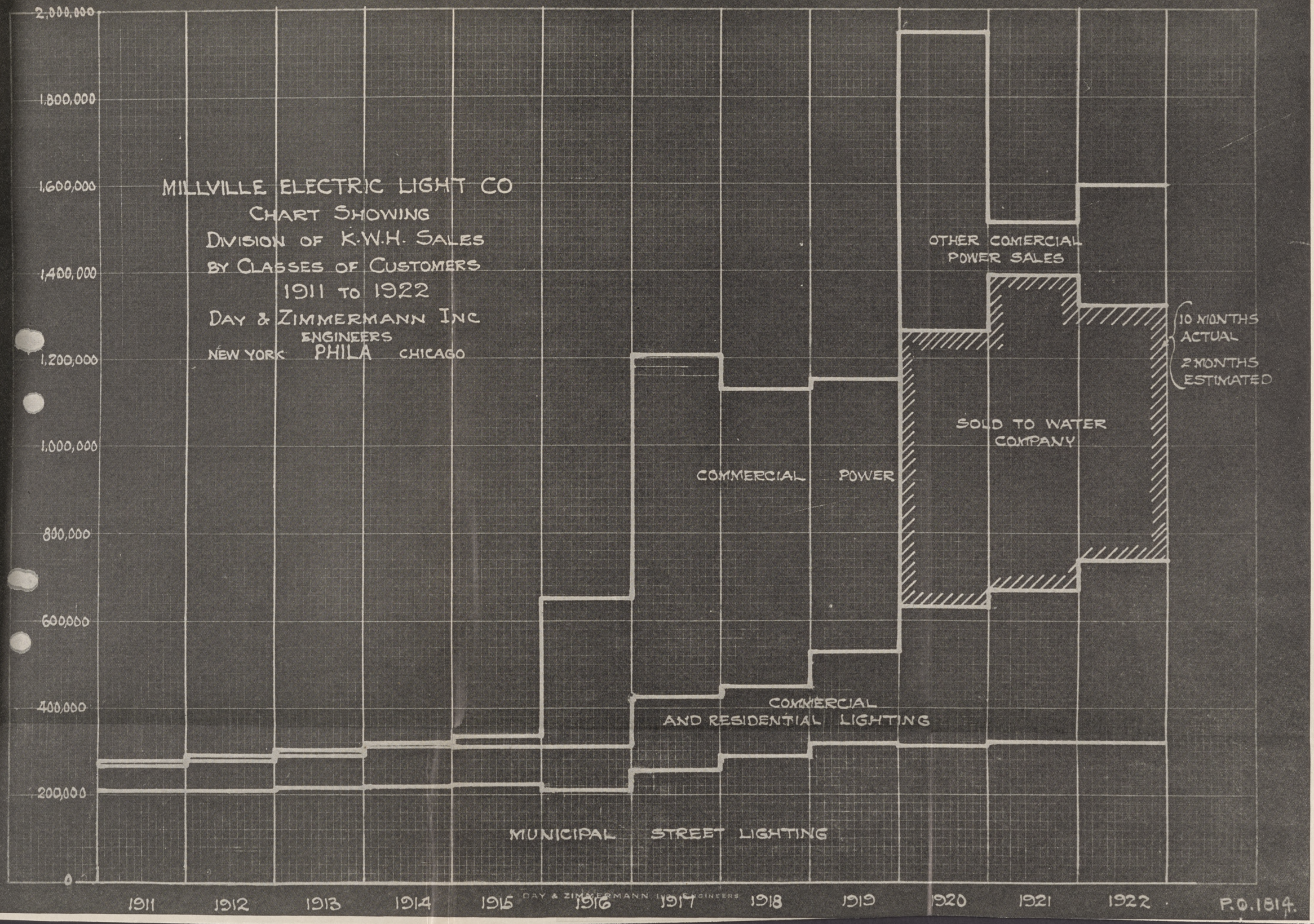
401-H

P.O.1814

MILLVILLE ELECTRIC LIGHT CO

CHART SHOWING
DIVISION OF K.W.H. SALES
BY CLASSES OF CUSTOMERS
1911 TO 1922

DAY & ZIMMERMANN INC
ENGINEERS
NEW YORK PHILA CHICAGO



DAY & ZIMMERMANN INC ENGINEERS

P.O.1814.

MILLVILLE ELECTRIC LIGHT COMPANY

CHART SHOWING
EARNINGS & EXPENSES
FOR THE PERIOD 1917 TO 1922
CLASSIFIED BY ACCOUNTS

DAY & ZIMMERMANN INC
ENGINEERS
NEW YORK PHILA. CHICAGO

$
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000

1917: 313, 306, 305, 301 302, I, IV, V, VI-VII-VIII, 495, 511 512, 494

1918: 313, 306, 305, 301 302, I, IV, V, VI-VII-VIII, 495, 511 512, 494

1919: 313, 306, 305, 301 302, I, IV, V, VI-VII-VIII, 495, 511 512, 494

1920: 313, 306, 305, 301 302, I

1921: 313, 306, 305, 301 302, I, IV, 495, 511 512, 494

10 MONTHS ACTUAL
2 MONTHS ESTIMATED

1922: SALE OF STEAM & NON-OPER 313, COMMER-POWER 306, COMMER-LIGHTING 305, MUNICIPAL 301-302, AMORTIZATION 494, INTREST 511 512, TAXES 495, COMMER-NEW BUS & GEN'L VI-VII-VIII, UTILIZATION V, DISTRIBUTION IV, PRODUCTION I

1922 ADJUSTED: 313, 306, 305, 301-302, 494, 511 512, 495, VI-VII-VIII, V, IV, I

ADJUSTED FOR INCREASED BILLING SALE OF STEAM TO GAS COMPANY

PO 1814

MILLVILLE ELECTRIC LIGHT COMPANY
COMPARATIVE STATEMENT OF OPERATION AND INCOME.

adj 169,343

Oct-1122

SEPTEMBER

	1922			1921			
K. W. Sold	134,788.8 K. W.			123,132.5 K.W.			108,550
INCOME STATEMENT	AMOUNT	PER K.W.		AMOUNT	PER K.W.	INCR.- BLK. DECR.- RED	
Elec. Operating Rev.	$ 11,693.56	.087		9,228.25	.075	2,465.31	9,647.27 .089
" " " Ded.	11,157.94	.083		11,186.32	.091	28.38	12,723.13 .117
" " " Gain	(G) 535.62	.004		(L) 1,958.07	.016	2,493.69	3075.86 .028
Non-Operating Income	2,614.73	.019		2,121.81	.017	492.92	2876.42 .026
Gross Corp. Gain	(G) 3,150.35	.023		(G) 163.74	.001	2,986.61	199.44 .002
Interest Deduct.	1,841.67	.014		1,420.97	.011	420.70	1765.44 .016
Net Corp. Gain	(G) 1,308.68	.009		(L) 1,257.23	.010	2,565.91	1964.88 .018
CORP. SURPLUS OR DEFICIT	Dr.	Cr.		Dr.	Cr.		
Bal. 1st of Month	103,171.66			94,778.50		Plus adj of new Net Gain	9,313.86
Net Corp. Gain	(G)	1,308.68		(L) 1,257.23			7,342.98
Other Add. to Surplus							
Div.on Outstanding Stock							
Other Ded.fr.Surplus							
Bal. end of Month		101,862.98			96,035.73		
	103,171.66	103,171.66		96,035.73	96,035.73		92,004.42
OPERATING REVENUE	K.W. Cons.	Net Rev. Cr.	Ave. per K.W.	K.W. Cons.	Net Rev. Cr.	Ave. per K.W.	Kwh Net R # PKWH
Mun.St. Ltg.- Arc.	3,317	132.92	.040	3,317	193.33	.058	3828 132.92 .035
" " " Inc.	22,450	938.46	.042	22,500	1,255.17	.056	25900 936.34 .036
Com.Meter Ltg.	28,161.8	5,827.55	.207	21,781.5	3,254.18	.150	4024.3 1571.69 .163
" " Power	80,860	4,794.63	.059	75,554	4,525.57	.059	38698. 2004.32 .052
" " Flat Rt. Ltg.							169343
Other Elec. Rev.							
Used by Respdt.,etc.	(1532)			(834)			(1276)
Total Oper. Rev.	134,788.8	11,693.56	.087	123,132.5	9,228.25	.075	108,550 9642.27 .089
OPERATING EXPENSE	AMOUNT	PER K.W.		AMOUNT	PER K.W.		$
Production Exp.	7,016.77	.052		8,261.17	.067		8262.83 .076
(Steam Sold)	(2,614.73)			(2,116.50)			2871.48
Distribution "	600.57	.004		401.88	.003		617.36 .006
Utilization "	687.99	.005		755.01	.006		1139.37 .01
Commercial "	60.77	.001		47.35			77.37
New Business "	8.50						8.50
Gen'l. Amortization	1,041.97	.008		230.09	.002		737.45 .007
Gen'l. & Misc. Exp.	903.01	.007		939.64	.008		1042.09 .01
Total Oper. Exp.	10,319.58	.077		10,655.14	.086		11 884.77 .109
Taxes	838.36	.006		531.18	.004		838.36 .008
Uncollectible Bills						TM	
Total Rev. Deduct.	11,157.94	.083		11,186.32	.090		12723.13 .117
Gross Amortization	2,217.59			2,023.62			2217.59

MILLVILLE ELECTRIC LIGHT COMPANY

	Balance Plant A/C	Operating Revenue		Operating Expenses	Operating Income(before Interest)	Net Change In Surplus Balance	DIVIDENDS Amount	%	Payable
1891									
1892	60,796.77	7,104.24		4,409.96	2,694.28	2,366.14			
1893	61,113.31	9,361.39		4,490.43	4,870.96	4,993.77			
1-31-95 (13 Mo.)	61,563.31	10,849.40	A	7,004.87	3,844.53	3,844.53	2,500.00	5	4/10/94
1-31-96	62,719.95	9,443.75	A	6,315.04	3,128.71	3,128.71	2,500.00	5	3/12/95
1-31-97	62,077.71	4,286.98	A	4,389.19	102.21(L)	102.21(L)	2,500.00	5	3/9/96
1-31-98	62,077.71	8,946.35	A	6,797.29	2,149.06	2,149.06			
1-31-99	62,077.71	9,355.90	A	7,626.59	1,729.31	671.67	1,250.00 750.00	2½ 1½	4/12/98 11/22/98
1-31-00	62,077.71	9,727.58	A	5,093.01	4,634.57	4,606.02	2,500.00	5	10/25/99
1-31-01	62,077.71	10,358.64	A	7,015.16	3,343.48	3,343.48	2,500.00	5	4/15/00
1-31-02	62,077.71	10,967.29		4,313.96	6,653.33	6,653.33	2,500.00	5	9/10/01
1-31-03	62,077.71	10,816.42	A	6,192.17	4,624.25	4,624.25	2,500.00	5	10/15/02
1-31-04	62,332.09	10,759.06	A	6,101.22	4,657.84	4,657.84	2,500.00	5	6/15/03
1-31-05	64,115.36	10,517.42	A	6,150.80	4,366.62	4,363.41	2,500.00	5	6/15/04
1-31-06	64,747.46	11,715.98	A	6,650.70	5,065.28	5,919.78	2,500.00	5	12/20/05
1-31-07	74,175.93	12,403.85	A	9,939.92	2,463.93	4,009.90	2,500.00	5	7/5/06
1-31-08	76,232.87	12,887.42	A	11,123.70	1,763.72	2,636.23	2,500.00	5	10/20/07
1-31-09	77,814.74	13,817.45	A	11,597.69	2,219.76	3,160.90	2,500.00	5	8/25/08
1-31-10	84,018.77	14,420.11	A	12,204.78	2,215.33	3,152.56	2,500.00	5	8/2/09
12-31-10 (11 Mo.)	86,044.10	14,274.63	A	12,276.83	1,997.80	3,818.26	2,500.00	5	7/6/10
1911	89,611.22	16,855.39	B	19,452.74	2,597.35(L)	1,450.04(L)	2,500.00	5	12/26/11
1912	92,908.25	18,863.68	C	24,267.38	5,403.70(L)	5,700.41(L)			
1913	94,070.79	17,190.17	D	25,799.65	8,609.48(L)	8,363.92(L)			
1914	96,582.03	20,116.83	E	25,862.66	5,745.83(L)	5,994.60(L)			
1915 Dec 31 1916	101,404.61	20,927.14	F	22,162.60	1,235.46(L)	1,076.44			
1916	99,805.57	30,840.39	G	31,806.46	966.07(L)	135.13(L)			
1917	97,812.47	45,823.34	H	47,294.25	1,470.91(L)	7,488.66(L)			
1918	95,312.47	48,649.87	I	50,494.15	1,844.28(L)	9,305.69(L)			
1919	95,312.47	52,790.79	J	50,408.06	2,382.73	6,822.35(L)			
1920 *	311,650.22	102,934.13	K	155,059.95	52,125.82(L)	64,746.44(L)			
1921	347,132.62	110,794.05	L	131,438.85	20,644.80(L)	21,486.81(L)			
1922		123,908.72		138,296.61	14,387.89(L)				

+ 24067.23 + 541.30

A - Amortization included $ 1,500.00 (16 Acct)
B " " 7,204.28
C " " 7,491.75
D " " 4,106.38
E " " 7,677.69
F " " 4,754.25
G " " 8,372.19
H " " 7,834.62
I " " 7,922.06
J " " 6,690.79
K " " 13,134.28
L " " 400.46
101088.75

* Balances of Construction Work in Progress.

		Plant Acct.		Total
1916	— 99,945.30	+	99805.57	= 199750.87
1917	134.034.25	+	97812.47	= 231846.72
1918	167,786.00	+	95312.47	= 263098.47
1919	200,484.67	+	95312.47	= 295797.14

From the above it will be noted that the gain per lighting unit runs fairly uniformly for all sizes. Also the total gain for the entire system at the number of lighting units accounted for, which was the number in service as of January 1, 1923, is slightly over $5,000.00.

The gain of $5,057.54 shown does not provide for the automobile expense which has been referred to herein. At a figure of $400.00 for this the net gain would be, say $4650. This would provide liberally for possible exegiencies and still pay a large return of the investment for Municipal Street lighting.

As shown under Acct. No. 128, p. 73, herein, the present "Cost New" of the Municipal Street Lighting Equipment is set up at $21,516 and the depreciated cost at $16,374. (The actual cost at which the greater part of this equipment was put in would be well below the depreciated cost, based on the prices which applied at the time it was installed in 1915).

In addition to a liberal return on a fair value of the investment, the gain from the Municipal Street Lighting would provide for a proper amount of Repairs to Lines, if same could be accurately allocated. The charge of nearly $2,200.00 which Respondent placed in the Utilization Accounts in 1922, (see page 124, herein), is almost as much as was charged for repairs to all of the remainder of Respondent's distributing system, (See Acct. No. 451, Ann. Rep., 1922). This, and the outrageous charge of $1,665.00 for alleged automobile expense, are unwarranted and unjustifiable.

The lighting units provided for in the table on pages 128 and 132 have met the requirement of the City of Millville, as clearly expressed in the specifications prepared by its Engineer in 1915, which Specifications formed a part of the Contract between the City and Respondent, entered into in the fall of 1915. These lamps are qualified, in every respect, to meet the requirements at this time, and

have always been so since the Contract was first in force (February 1, 1916). The impression which would be gleaned from the Record of Testimony, pages 523 and 524, is absolutely not based on facts, but entirely on misinformation.

Plaintiff further states that these lamps and lighting units will not only meet the requirements as set forth in the Specifications, but will, when properly cared for and attended to, exceed these requirements by around 20 per cent. as an average.

When these lighting units have failed to perform properly it has been due to negligence or other delinquency on the part of the Respondent and to no other cause. For a considerable time, in the early period of the operation of the street lighting system the Respondent was not able to maintain the current to the street lamps at its proper value. This the Respondent will not deny. The facts relating to it form a part of the Record in a case in one of the Courts of the State of New Jersey and can, if need be, come before this Commission for consideration. It is well known, and will not be disputed, that the operation of the gas filled, high efficiency incandescent lamp as to emission of light, is seriously interfered with if the current is below the required value. A decrease of 10 per cent. in current will lower the amount of light from the lamp by over 40 per cent.

Furthermore, Respondent cannot deny that the lighting units of this system were neglected for a long time after the operation of the new system began. Lamps were not cleaned, renewals were not properly attended to, and the results were such that the City of Millville was obliged to protect itself from such gross injustice, under the terms of the Contract. These are matters of record and it is not thought Respondent will attempt to deny any of them.

(Moreover, while it is not a pertinent part of this case, the experience of the City for many, many

years at the hands of the Respondent, prior to installing the present system, also amply justified the City authorities in protecting the interests of the City. Old, worn out, arc lamps, of "prehistoric age" were retained in service year after year for probably fifteen or twenty years at high annual cost each; and, all efforts toward improvement by the City were rebuffed by Respondent.)

The use employment of larger sized lamps for these lighting units, which Respondent alleges are being used, are neither required nor desired by the City.

The accomplishment of good street lighting is had through proper design of the system, by the use of proper equipment placed in proper locations on the streets; and, in the operation of this equipment in the proper manner. In the design of the Respondent had no part as this was done through the efforts of the City and at the City's expense. As to the operation of the system, Respondent has been well paid for this service, at such figures as to give a good and liberal return.

There is nothing unreasonable in the attitude of the City as Respondent has insinuated in various parts of the record of this case. The proper operating expenses for such a system as this have been given in detail after being determined with great care and accuracy and, unless deliberate wastefulness exists, as it has been seen from the record to exist otherwheres in the operation of this property, there is a most generous profit to Respondent from the Municipal Lighting System at the prices based on the Contract which was operative from February 1, 1916, for the ensuing five years.

In the Court case referred to on previous page, some of Respondent's own witnesses admitted that the percentage of lamps tested to determine the performance of this system were proper and sufficient, and none of Respondent's denied this. Furthermore,

the percentage of lamps tested by City's Engineer has been, uniformly far in excess of the amount specified by such authorities as the United States Government, Electrical Testing Laboratories, etc. All tests have been conducted, at all times, with scientific accuracy and with absolute fairness to Respondent.

Plaintiff therefore submits that Respondent should operate and maintain the Municipal Street Lighting System in such a way as to meet the desires and requirements of the City of Millville, who is the purchaser of the lighting service, and that such service should be rendered in a fair and business like manner and at prices which are fair as herein set forth in the table on page 132, (lower), under the heading of "Revenue" per Unit.

Accounts 470, Commercial Administration; and 475, Business Promotion, have already been referred to herein, see bottom page 116.

Accounts 481 to 492, inclusive, General and Miscellaneous Expenses.

The total of alleged expenses under these Accounts, as seen from the Annual Reports of Respondent to The Commission, has grown to nearly three times its amount in 1919. This total was slightly over $6,000 in 1919 and is slightly over $18,000 in 1922.

Without discussing each Account in detail, it may be noted that No. 481, Salaries and Expenses of General Officers, has multiplied by nearly three. Acct. No. 482, increased about fifty per cent.; Acct. No. 483, is about doubled; Acct. No. 484 has been increased to between six and seven times what it was in 1919. Acct. No. 485 is nearly fifty per cent. increased. Acct. 490, Stationery and Printing, is about doubled.

As against this relatively tremendous increase in these "overheads," it should be noted that the actual bona fide sales of the Respondent have decreased since 1919. In 1919 the sales to the public

were 1,044,602 kilowatt hours. In 1922 these same sales were 900,337 kilowatt hours.

In per cent. of revenue from the Respondent's bona fide sales this total is approximately 19 per cent. which is excessive and absurd. (Sales to public in 1922 are slightly in excess of $96,000.)

Plaintiff submits that any so-called revenue from such sources as Sale of Steam to Gas Company, or power sales to Water Company is not entitled to consideration in the above matter. With all these Companies under the same control, these alleged transactions are nothing but a matter of bookkeeping, not separable as to the cost of selling, between the so-called Companies.

There is no excuse from any standpoint, for such extremely high overhead costs, even if the business of the Respondent were well managed.

The Record of this case is so full of facts showing gross mismanagement, wastefulness, poor public relations, (See testimony, pages, 381-384; also p. 387; also, p. 392; also p. 402; also record of property and its performance as per previous references herein), equipment in bad condition, etc., that the Plaintiff submits, such mismanagement as has been here shown by Respondent's own record, is not worth the figures that are reported for the "overhead" Accounts.

Plaintiff also submits that such mismanagement would be too expensive if it cost Respondent nothing whatever. The record of the old steam plant; the failure to make full use of the power from the Hydro-Electric Plant; the attempt to make up for unnecessary and absurd losses, and alleged losses, by applying rates for power and lighting which the public cannot stand and current market prices do not support; under protection from competition by the State, all prove that Plaintiff's claim above made is not extreme or unfair but well supported and conservative.

Another phase of the situation deserves notice in this case. In the hearing on January 23, 1923, Respondent's witness stated in reference to matter of street lighting for the City of Millville, "We have asked the City several times to enter into a new contract with us." "We finally offered to enter into a contract with them that was 12 per cent. above the old contract made in 1915, * * *" (Franklin, p. 320). Same witness on same page, later says, "We render bills to them monthly on the basis of the new price that we asked for * * *."

The facts are that the price proposed for this lighting was more than 43 per cent. above the former contract price, and not 12 per cent., as the witness stated for the record. (Based upon the same number of lighting units as are provided for in table, bottom p. 132, herein, for which the old contract price is, as shown in the table, $12,857.00, the price as proposed by Respondent and billed, as witness says, to the City is $18,410.00. This is an increase in excess of 43 per cent. Bills can be placed at disposal of the Commission if they are desired.)

It seems scarcely possible that this witness' arithmetic could have been so much at fault as is shown in his sworn statement.

There are several of such mistakes in the record. Another one which may be cited is found on page 354 of the testimony, same hearing as above, in reference to the losses incurred by Respondent in the "sale of steam" to Gas Company by Respondent.

Question by Attorney for Plaintiff, "* * * I will read from Day & Zimmerman's report, 'The total revenue collected from the Gas Company in 1920 was $21,962 or approximately $10,000 less than the actual cost of coal alone.' Is that so; do you believe it to be true?"

Answer by Mr. Franklin, "Read it over again."

(Quotation from report of Day & Zimmerman was read again, exactly as above given.)

Answer—"Not the actual cost of coal alone for the Gas Company."

Question—"Coal alone to the Electric Light Company?"

Answer—"For all the coal used."

From the above the witness would have the Commission think that the cost of all the coal used in the steam plant in 1920 was $10,000 more than the $21,962, or about $31,000, to $32,000.

The actual fact is that the cost of the coal was $67,633. (See Annual Report or Exhibit P-12, page 24 Acct. No. 402, or Respondent's own Exhibit R-8, same Acct. for 1920).

The import of the statement from Report of Day & Zimmerman is that the sales of steam to Gas Company in 1920, failed to pay for even the fuel required, according to their estimate, by the sum of $10,000.

The fact that such a situation should exist in the first place is little credit to the zeal of the management in the Respondent's interest; and, since such a glaring loss did actually occur, it would seem it should have made some impression at least to the end that a misstatement such as the above would not have been made.

A study of Exhibits Nos. P-30a, P-30b, and P-30c, showing Salary Account of Officers and Office Help for years 1919 to 1921, inclusive, shows that there is too much "dead wood" in the "Overhead" organization and that the Respondent is "over manned and under managed." A more compact organization in which each and every member from the top down should function in Respondent's behalf and interest would be a great economy as to actual cost and a still greater economy due to the results produced.

The business of this Respondent is neither large nor complicated and it is in no financial condition, due entirely to its own misdoings, to support ex-

cesses or wastefulness in its "overheads" of operation or anywhere else.

The current problems of operation are easy of solution if the business is conducted in a straightforward manner.

When important construction work is to be done, engineering talent of the highest grade may be secured at a fraction of the absurd percentages "charged" by the High Pressure Construction Company by whom Respondent claims the steam plant was built.

Plaintiff submits that these "Overhead" charges should not exceed the 1919 figures, and that the sum of $7,000.00 is a liberal and fair allowance for management, attention to purchases of current supplies, and keeping the books, together with the miscellaneous other items which are included in Accounts 481 to 492 inclusive.

In the face of the foregoing facts, Plaintiff submits that Respondent's Exhibit No. R-8 does not, in fact, show the reasonable or "Possible Economies" of operation which might have been applied to 1922 or to future years, including the current year.

Plaintiff submits, that if Respondent will be guided by ordinary business intelligence, and apply the simple economies herein described, (changes in equipment at the Hydro-Electric Plant, being provided for through salvage of old generators, shafting, pulleys, etc.,) the "Operating Expense" as tabulated below will be found to exceed the actual requirements.

PRODUCTION—HYDRO-ELECTRIC PLANT

(See pages 40 and 41)

Acct. No.	Item	Cost	Totals
401	Labor,	$4,800	
403c	Lubrication,	100	
403d	Other Station Supplies and Exp.,	500	
411	Repairs, Station Buildings,	150	
413	Repairs, Hydraulic Equipment,	350	
415	Repairs, Electric Equipment,	200	
416	Misc. Station Repairs,		
	Total, Hydro-Electric Production,	$6,100	$6,100

DISTRIBUTION

(See page 43)

440 to 454 incl.	(Not given in detail),	$6,000	6,000

UTILIZATION

(See page 46)

464	Municipal Arc Lamp Maint.,	$472	
465	Municipal Incandescent Lamp Maint.,	2,831	
	Total, Utilization,	$3,303	3,303
470	Commercial Administration,	$680	680
475	Business Promotion,	$200	200

GENERAL & MISCELLANEOUS EXPENSES

(See pages 49–51)

481 to 492 incl.	Not given in details by Accounts but distributed approximately as follows:		
	Gen'l Officers and Management,	$2,500	
	Clerks, etc.,	2,100	
	Gen'l Supplies and Exp.,	500	
	Misc. Gen'l Exp.,	500	
	Remainder,	1,400	
	Total, Accounts 481–492,	7,000	7,000
494	General Amortization, (3½% of fair value of "used and useful" property, namely, $120,000,—see bottom p. 35 herein),	$4,200	4,200
495	Taxes, (Indeterminate,—provided for in "Revenue" less "Expense").		
419	Purchased Power, (See under "predicted load" following pages), 425,000 k.w. hrs. @ .0267,	$11,348	11,348
	Total "Operating Expense," exclusive of Taxes		$38,831

Rates.

The average revenue per kilowatt hour received by Respondent from sales of power for "Commercial Metered Lighting" and "Commercial Metered Power" for two years prior to present rates and two years since their application, is given in the following table. (Based on Annual Reports to The Commission, see also Resp. Exh. No. R-8 for years referred to.)

SALES AND REVENUE—COMMERCIAL METERED LIGHTING AND POWER

1919, 1920, 1921, and 1922.

Year 1919.

Item	Kilowatt-Hours	Revenue Total Dollars	Revenue Cents per Kw. Hr.
Commercial Lighting,	213,677	$20,958.16	9.81
Commercial Power (Rep),	618,667	20,426.77	3.30
(Used—Water Co.),	(102,064)	(3,382.80)	(3.31)
Power to Public,	516,603	17,043.97	3.30
Year 1920.			
Commercial Lighting,	321,982	$31,770.33	9.87
Commercial Power (Rep),	1,316,140	37,726.99	2.86
(Used—Water Co.),	(487,554)	(12,651.29)	(2.60)
Power to Public,	828,586	25,075.70	3.02
Year 1921.			
Commercial Lighting,	348,762	47,694.83	13.67
Commercial Power (Rep),	847,651	47,161.91	5.56
(Used—Water Co.),*	(674,829)*	(33,690.86)*	(4.99)
Power to Public,	172,822	13,471.05	7.80

NOTE: (*) Above quantities for "Used—Water Co." are as per 1921 Water Report to The Commission. Actual "Used—Water Co." was increased as per letter, Gen. Mgr. Franklin to Col. Betts, Oct. 19, 1922, from above to 720,367 k.w. hrs. Revenue for it was also increased. See under "W," pages 16 and 17 herein. Changes do not effect result of "Power to Public" which are as above shown for year 1921.

Year 1922.

Commercial Lightin,	423,093	$63,734.30	15.06
Commercial Power (Rep),	781,552	47,498.45	6.08
(Used—Water Co.),	(629,710)	(27,385.87)	(4.35)
Power to Public,	151,842	20,112.58	13.25

It is seen from above that the general public in the territory supplied by Respondent has paid rates that are exhorbitant in the past two years. It would seem to be impossible for the "Power to Public" to have cost as much as is shown but, according to the Water and the Electric Company Reports for 1922, this is a fact.

For both kinds of service these rates are practically prohibitive, in the face of a fair market price for this commodity. They are also absolutely unwarranted from the standpoint of fair operating costs or from any other standpoint.

Respondent's revised schedule of Rates, recently presented, (Testimony, p. 413), purports to reduce present rates by 25 per cent., and, further, to return same to basis existing before the present rates went into effect in 1921, (Testimony, p. 434). The following table shows the facts:

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COMPARISON OF RESPONDENT'S RATES

(Figures are in "Cents per K.w. Hr. Net.")

Schedule	Rates Prior to 1921, (Net)	Rates 1921 to Present Time (Net).	Rates Proposed by Resp., (Test., p. 413) (Net)
"A" Residence, Office, Professional & Club lighting.	30 k.w. or less, 12c, over 30 k.w.—all at 10c.	30 k.w. or less, 16c, over 30 k.w.—14c.	30 k.w. or less, 13c, over 30 k.w., 12c.
"B" Store & Commercial lighting, including churches.	100 k.w. or less, 10c, over 100, up to 500, all at 9½c, over 500, all at 9c.	100 k.w. or less, 14c, over 100 up to 500, 13½c, all over 500, 13c.	First 100 k.w., 12c, all over 100, 11c.
"C" Transient Lighting.	Up to 100 k.w., 14c, over 100 up to 500, all at 13c, over 500, all at 12c.	All at 18c	All at 18c
"D" Sign Lighting.	(Average 3 or more hours each week-day night.) First 100 k.w. at 7c, over 100, all at 6c.	All at 10c	All at 12c
"E" Industrial Lighting.	When used in connection with power under Schedule "AP," lighting will be 1½ times average power rate for month.		Schedule "B" applies if power consumption is less than 500 k.w. per month. If more, then ltg. is, 10c.

	Steps k.w. used	Rate c k.w.	Steps k.w. used	Rate c k.w.	Steps k.w. used	Rate c k.w.
	250	7½	250	10	250	8 Net
	250	6½	250	9	250	7 "
"AP"	1000	5½	1000	8	1000	6 "
	1500	4½	1500	7	1500	5 "
	2000	3½	2000	6	2000	4 "
Power.	5000	2½	5000	5.5	5000	3½ "
	1000	2.4	5000	5	5000	3 "
	1000	2.3	5000	4.5	5000	2½ "
	1000	2.2	All over 20,000		All over 20,000	
	1000	2.1	5.5 Net.		3½ Net.	
	1000	2.0				
	1000	1.5				

New Jersey State Library

From the above it is not easy to understand why Respondent should state that proposed Rates are a reduction of 25 per cent. or that they are the same as before 1921, as they will be seen to be far from either.

Reference to rates for Residence Lighting shows that both present and proposed rates are too high to permit a household, in any community, to make extensive use of electric power either for lighting or other conveniences. In setting up such rates, Respondent seems to have overlooked the fact, that Utilities generally, find favorable increases in the day load through the use of such conveniences as electric irons, washing machines, vacuum cleaners, toasters, fans, etc. by so-called Residence consumers. The need for improvement in "day load" has been repeatedly expressed, throughout the record of this case, by Respondent's witnesses, and is shown in the load charts as well.

All of the Schedules shown in the table of present and proposed rates are far too high to enable the Respondent to meet with the growth which, in the present situation, should be made. It must be noted that there are only about one-fourth the number of consumers on Respondent's lines which should be there in a city of over 16,000 population which is as thrifty and industrious and progressive as is the City of Millville.

Such excessive rates must be, and are, a blight to the community and a serious drawback to its prosperity. It is absurd, and worse, than an incoming industry, which would bring with it added wealth and increased business in all lines to the merchants and trades people of the community, should be obliged to appeal to the City Commission for aid in getting its required supply of power, (See Testimony, p. 387, and pages 33 and 34, herein).

Only the most shortsighted vision could prevent

Respondent from seeing, instantly, that such policy is against its own best interest.

If fair rates are applied, Plaintiff submits the following table as a prediction of "Sales and Power Requirements" on an Annual Basis. (Effect is given, in the Street Lighting requirements for power, to the increases which have been made in 1923.)

(K.W. HRS.) PREDICTED SALES AND POWER REQUIREMENTS—ANNUAL BASIS.

Item	Kilowatt Hours	Remarks
Street Lighting, Arcs,	41,354	Same as 1922.
Incandescents,	211,834	Addition of 8,372 k.w. hrs. for lamps added, 1923. (For '22, see p. 47).
Commercial Lighting,	560,000	Estimated.
Commercial Power,	300,000	Estimated, (Power to Water Co. not included.)
Total, Est. Sales,	1,113,188	
Lost & Unac't For,	169,678	15 per cent of total sales. (Is in excess of actual prior to steam plant operation. (See "L," p. 16 and 17, herein). Street lighting power is included in getting this loss, though it is actual quantity at switchboard and should not be included.
Used by Respondent,	17,134	15,134 Hydro-Plant, and balance, "other used by Respondent."
Total Power Required,	1,300,000	
Production, Hydro-Electric Plant,	875,000	See pages 17, and 18, herein.
Power Purchased,	425,000	Refer to Acct. No. 419, p. 52, herein.

An analysis of the "Costs of Production, Giving Effect to Improvements and Economies" as herein outlined, and as shown by the Record of the case, to be necessary, is given on the following page. As

will be noted, provision is made for the value of the Water Right at the Hydro-Electric Plant in the form of an allowance of a charge per kilowatt hour, by adding the interest on $20,000.00, its alleged value, at 6 per cent. per annum, namely, $1,200.00, to the operating expenses at the Hydro-Electric Plant. It is the claim of the Plaintiff, that this should be done only if the Water Right is utilized to its full extent as indicated herein, by the application of the improvements; and, if such full utilization be not made then Plaintiff claims the loss from the resulting inefficiency will wipe out the value of the Water Right as such, because of the losses due to the said inefficiencies.

Respondent is supposed to operate efficiently and rates are supposed to be based "on an efficiently managed corporation," (Record of hearing, January 23, 1923, p. 382).

COST OF PRODUCTION AND OPERATION, GIVING EFFECT TO ECONOMIES.

(Details of Operating Costs on p. 52, herein.)

	Kilowatt Hours	Costs Total Dollars	Costs c per k.w. hr.
Production, Hydro-Electric Plant,	875,000	$6,100	0.697c
Water Right, (Annual Basis),		1,200	0.137c
Total,	875,000	$7,300	0.834c
Purchased Power,	425,000	11,348	2.67c
Total Production,	1,300,000	$18,648	1.434c
Capital Charges against Hydro-Electric Plant, 6% return, plus 3½% amortization reserve, total, 9½% on Reproduction Cost, New less Accrued Depreciation, $16,874, (see bottom p. 8, herein),		1,603	
Operating Overhead, 10% of Accts. Nos. 481 to 492, inclusive, (See p. 52),		700	
Gross Cost of Production, (Exclusive of Taxes Apportionment),		$20,951	1.612c
Same Gross Cost of Production in Terms of "Power Sold,"		(See p. 55)	1.883c

(From the above it is seen that the application of 2 cents per kilowatt hour as cost of power for street lighting operation is well outside of the actual Gross Costs.)

The Item of Taxes is comparatively small and its exclusion from the above is not therefore misleading. From Exhibit P-12 it will be noted that Taxes have undergone a remarkable increase since the steam plant has entered into the calculations. Some increases of other property are also accountable for increased Taxes.

Plaintiff submits that Respondent's alleged interest obligations on outstanding notes in favor of, or held by, the chief owner and one of the officials of the Respondent Company, have no bearing upon the matter of return on this property. These notes, as has been brought out in the case, are, in a large measure, for alleged accrued interest, and again, for profits in absurd percentages, on alleged construction work.

Plaintiff further submits that 6 per cent. return and 3½ per cent. for amortization reserve is adequate and liberal for this property. Repairs are liberally provided for in the Operating Expenses, as will be seen on page 52, herein.

Based on the estimated Sales, as presented on page 55, herein, Plaintiff submits that adequate Revenue will be realized by Respondent with the application of equitable and proper rates. The modification in Rates should be so made as to bring about greater consumption on the part of the small consumer, and, further, to increase the number of consumers. This applies to both classes of service, namely, lighting and power. Instead of driving away prospective consumers, both large and small, as has been the case in the past, this will draw more business.

The rate structure, as it has existed, and as proposed does not accomplish this, as shown by refer-

ring to analysis of the "Sales and Revenue," (p. 53 herein).

Furthermore, the proposed reductions in rates, as offered by Respondent, as they relate to power, do not materially relieve the small consumer, but favor chiefly the large consumer. The "consumer" which would be chiefly benefitted is the Water Co. and it is not to be supposed that there will be a continuation of the flagrant wasting of power by pumping water electrically when it can be pumped by a water power that is available.

Plaintiff claims the following rates are adequate and fair and will supply the required revenue for the proper return on a fair value of the property, with a liberal margin in addition thereto.

Schedule "A," Residence, etc., Lighting.
First 30 k.w. hrs. @ 10c k.w. hr.
All over 30 k.w. hrs. @ 9c k.w. hr.

Schedule "B," Store and Commerical Lighting,
First 100 k.w. hrs. @ 9c k.w. hr.
All over 100 k.w. hrs @ 8c k.w. hr.

Schedules "C," "D," and "E," as they were prior to 1921. (See p. 54,)

Schedule "AP." Power

First	250	k.w. hrs. @	6c	k.w. hr.
next	250	" " "	5.5c	" "
"	1000	" " "	5c	" "
"	1500	" " "	4.5c	" "
"	2000	" " "	4c	" "
"	5000	" " "	3.5c	" "
"	5000	" " "	3c	" "
"	5000	" " "	2.75c	" "

Over 20,000 k.w. hrs., all at 3.25c k.w. hr. net.

A careful study of Respondent's Sales will show that, at the above rates, and with the predicted Commercial Lighting and Power Sales as shown in the table on page 55 herein; the Revenue to Respondent would be not less than is shown below:

Item	Kilowatt Hrs.	Revenue Ave. k.w. hr.	Total
Municipal Street Lighting,			
Arcs, (Additional Lights Included)			$1,595
Incandescents,			11,784
Commercial Metered Lighting,	560,000	@ 9.25	51,800
Commercial Metered Power,	300,000	@ 4.68	14,040
Total Revenue from Electric Sales,			$79,219
Total Operating Expense (Exclusive of Taxes),			38,831
Operating Gain, Available for Taxes and Return on Value,			$40,388

Plaintiff submits that the application of the rates above presented will greatly benefit both the Respondent and the community it supplies.

Plaintiff claims that the above rates should be effective as of an early date in the period in which the issue has been before The Commission, and not later than January 1, 1923.

PUBLIC STREET LIGHTING
for the
CITY OF MILLVILLE, NEW JERSEY.

INSTRUCTIONS TO BIDDERS

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1. Sending in Bids:

All bids shall be made out in accordance with these instructions, sealed and addressed to the Director of Public Safety, City of Millville, New Jersey. They will be received at his office during the regular business hours, up to the hour of eleven A. M., on August 30, 1915.. The award of the contract will be made thereafter, according to law, as soon as practicable.

2. General.

All bidders will clearly understand that the lighting service to be supplied must be in strict accordance with the spirit of the contract and specifications, as interpreted by the Engineer; and the contract and specifications, as well as these instructions, should be read and carefully digested by all intending bidders.

3. Qualifications of Contractor.

All bidders must satisfy the Director of Public Safety, at the time of bidding, as to their competency for supplying the street lighting service called for, and as to the sufficiency of their cash capital, and the ample capacity of their source of electric supply; also as to their organization and working force to fully supply the service which the specifications and contract call for. No bid will be accepted without such assurance as will satisfy the authorities that

the bidder, should he be awarded the contract, is amply equipped in every way to meet all requirements.

4. Certified Check and Bond.

Each bid shall be accompanied by a certified check for the sum of One Thousand Dollars, payable to George B. Worstall, City Treasurer of Millville, N. J., without conditions. The City Treasurer shall have the right to send the check of any bidder or bidders likely to be awarded the work, for collection, prior to the acceptance of the bid; cash to be held until the contract is signed.

The party to whom the contract shall be awarded shall furnish a bond of a responsible Indemnity or Guarantee Company, authorized to do business in the State of New Jersey and which shall be satisfactory to the Director of Public Safety, for the sum of Five Thousand Dollars ($5,000.00) such bond to be conditioned for the faithful performance of the contract. The name of the Indemnity Company must be submitted to the Director of Public Safety within five days after the date of award, together with a letter from said Indemnity Company, agreeing to qualify as bondsman. The contractor will be required to attend at the office of the Director of Public Safety with the sureties of award, and in case of neglect or failure so to do, he will be considered as having abandoned it, and as in default to the City; and the amount of the certified check herein specified shall be payable to the City and held and retained by it for its own benefit. The City shall then have the right to re-award the contract.

5. Return of Certified Check.

Within five days after the opening of the bids the Director will return all certified checks which were deposited at the time of filing the bids, except the

deposit made by the successful bidder, which shall be held by the Director in accordance with paragraph 4 of these instructions.

6. Bids to be Itemized.

All bids must be itemized in such a way as to show the annual cost for supplying and maintaining in satisfactory operation, in accordance with the specifications, each type and size of lighting unit called for. The annual cost for the entire number of lighting units of each size and type must also be given. All bids must also state a lump sum for which the entire street lighting service, covered by the specifications, will be supplied. This lump sum must be a summation of the several items covered by the bid. In other words, the bids must be balanced bids. Each bid must cover the entire work called for in the specifications.

7. Location of Street Lighting Units.

Each bidder must inform himself by careful examination, as to the location of each type of street light called for under the heading of "Location of Lamps" in the specifications. Each bidder must be prepared to mount and install and support each lamp in accordance with the specifications, and in such a manner as to avoid, as far as possible, the obstruction due to all objects, such as trees, poles, signs, or any other thing which would prevent the greatest possible amount of light from reaching the city streets, sidewalks and alleys.

8. Avoiding Present Wires.

All bidders must inform themselves by careful examination, as to the existing poles and wires now in place along the city streets, so that in case any additional construction work be necessary,

proper clearance distances between any new wires and those at present existing, may be secured.

9. Identity of Bidders.

Bidders shall state in their bids, under oath, their corporate names and the places and locations of their business and executive offices; and the place and location of their operating headquarters; and the names of all persons or corporations interested with them as proprietors or owners, or in a supervisory or executive capacity; and if no other corporations or persons be so interested than those mentioned by the bidders, the bidders shall definitely and distinctly state this fact. Each bidder shall also state, under oath, that his bid is offered without any connection with any other person or corporation who may also be offering a bid under these specifications.

10. Changes in Bids or Specifications or Contract.

Additions, alterations, erasures, or interlineations in any bid or in the specifications, or in the contract, shall, at the discretion of the Director, be a sufficient cause for the rejection thereof, provided that this does not mean that modifications in the location of any of the street lighting units called for in the specifications shall not be permissable, at the discretion of the Director.

11. Alternate Bids on Arc Lamps.

Alternate bids on arc lamps may be offered by the bidder, who shall supply full information as to the technical and engineering features of such lamps. This information shall state fully the following: The amount of light emitted at an angle of ten (10) degrees below a horizontal plane passing through the arc; the illumination in foot candles which is available from the lamp when the same is

suspended at its most suitable elevation from the street level, at a point one hundred and fifty feet (150) distant from the lamp; most desirable elevation from the street at which each lamp should be suspended; current at which lamp operates; watts consumed by lamp; type of electrodes to be used in lamp, together with maker's name, and full information as to size and designation of electrodes; information as to type of globe to be used, as well as important construction and operating details of lamp.

Unless the information herein called for shall be fully and clearly given by the bidder, in the form of a guarantee, the Director shall not consider such alternate bids on arc lamps as may be offered.

SPECIFICATIONS

for

FURNISHING, MAINTAINING AND OPERATING ELECTRIC LAMPS

for

LIGHTING PUBLIC STREETS, ALLEYS, ROADS AND HIGHWAYS

and

ALL PUBLIC PLACES

in the

CITY OF MILLVILLE, NEW JERSEY

GENERAL

1. Instructions to Bidders.

All bids shall be made out in accordance with the instructions attached to these specifications, and forming a part thereof, and entitled "Instructions to Bidders."

These instructions contain full information relating to sending in bids; qualifications of Contractor; certified check which is to accompany bid; bond which must be furnished by successful bidder to whom contract is awarded; return of certified check; form of bid; identity of bidder; and all other information of importance to bidders on the street lighting service covered by these specifications.

2. Definition of Terms.

Whenever in these Specifications the terms appearing below are used, they shall be interpreted as follows:

"The City"—The City of Millville, New Jersey.

"Director"—The Director of Public Safety of the City of Millville, New Jersey.

"Engineer"—The engineer appointed and employed by the City of Millville, New Jersey, and duly charged to represent the City in an engineering capacity with regard to the carrying out of the service called for in these specifications.

"Contractor"—The word Contractor whenever used in these specifications refers to the party or parties bidding on the work herein specified. Upon final acceptance of any bid by the City, the word Contractor refers to the party or parties whose bid shall be so accepted, whereupon these specifications become a part of the Contract to be entered into between the purchaser and the Contractor.

3. Object of Specifications.

The object of these specifications shall be to secure for the City, for a sum of money to be fixed upon, the highest possible grade of street lighting which is warranted by modern engineering practice, and in which shall be used only the latest and most modern and up-to-date electric lighting equipment, the usefullness and reliability of which have been thoroughly proven. The Contractor will offer bids on this type of electric lighting equipment only, and no other bids will be considered.

It is required that where incandescent lamps are specified, only the latest type of gas-filled, high ef-

ficiency, Tungsten filament lamps shall be provided and used; and it is also required that where arc lamps are specified, only the latest and most modern and most efficient type of arc lamp shall be provided and used, and bids on any other types of lighting units will not be considered; and it is further required that in order to give the City the fullest possible advantage which is attainable from the arc lamps used, only those electrodes giving the highest efficiency shall be employed in the arc lamps which the Contractor shall provide. It is also required that the Contractor shall maintain each and every lighting unit called for in these Specifications in first-class operating condition, in order that the greatest possible benefit in the way of street lighting shall be received by the City.

4. Changes.

The Director shall have the right to make such changes in the number of lamps herein specified, or in the location, or in the size and type of any lamp, as the best interests of the City may from time to time require.

Lamps may be added to, or deducted from the number herein specified. Provided, however, that at no time shall the number of street lighting units in service be less than such a number as shall show a total annual charge at the rate of Ten Thousand Dollars, ($10,000.00) per year of four thousand (4,000) hours.

When, in the opinion of the Director, or the Engineer, the existing conditions in any locality shall require that any lamp or lighting unit shall be discontinued from service, the same shall be taken off the system, upon written order of the Director, within forty-eight (48) hours after notice has been served upon the Contractor. If such lamp or lamps be not removed within this time, no payment will be due

the Contractor thereafter, and a further operation of such lamps will be entirely at the Contractor's expense.

When, in the opinion of the Director or the Engineer, the installation of additional lamps becomes necessary, the Director shall so notify the Contractor, in writing, and the Contractor shall provide and install and put into operation the additional lamps as soon as possible, and in no case shall the time required to completely and finally carry out such changes exceed an interval of twenty (20) days from the day such written notice is received by the Contractor from the Director.

In order to avoid delays which might possibly be caused through failure to receive additional lamps promptly from the manufacturing or supply companies through whom they are obtained, the Contractor shall make such arrangements with these companies as to enable him to install and operate any reasonable number of additional lamps of the types herein specified, within the time called for in these Specifications. It is understood that this portion of the Specifications relating to the installation of additional lighting units shall refer to the lighting of any public street, highway, alley or other public place within the confines and geographical limits of the City of Millville, New Jersey, provided, however, that where extensions of pole line into new territory are called for by the Director, the Contractor shall be required to erect and install and construct not more than two hundred and fifty (250) feet of pole line or distributing system for each new incandescent lamp of whatever size required and called for, nor more than five hundred (500) feet for each arc lamp required and called for.

It is required that upon written notice from the Director or the Engineer, the Contractor shall make any change in the location or size and type of any street lighting unit called for in these Specifications,

as soon as possible after the receipt of such notice, and in no case, shall the time required to completely and finally carry out these changes exceed an interval of twenty (20) days from the day such written notice is received by the Contractor from the Director. Additions shall not be made during last year of contract, unless it has been agreed that contract shall be renewed.

5. Patents.

The Contractor agrees to protect the City against any and all losses or expenses from suits or royalties or claims of any kind whatsoever, and against any damage caused by being forced to suffer from an interruption in the operation of the street lighting system, as a result of suits, losses, expenses or damages arising from alleged infringements in the use of any apparatus furnished by the Contractor; and it is agreed that all expenses occasioned by suits relative to any of the above are to be borne entirely and exclusively by the Contractor.

6. Damages.

The Contractor agrees to assume all liability and to fully protect the City from any such resulting from injury or damage to life or property arising from such accidents as broken or fallen wires high voltage, electric current, or from any other accident to any portion of the material or equipment or apparatus which the Contractor shall employ in supplying the City street lighting service herein specified, except that the Contractor shall be relieved of liability for accident or damage to life or property if such accident or damage should occur through act or acts of negligence on the part of the Director or his Engineer, when tests on the City street lighting system as herein specified are being made, provided that if such accident or damage to life or property be not

due to act or acts of negligence on the part of the Director or his Engineer, then the Contractor shall assume liability for same, as specified in the Contract.

7. Material and Workmanship.

The Contractor agrees to use only high grade material throughout the entire distributing system, and all construction work shall be performed in a thorough and workmanlike manner, and in accordance with the best and most modern engineering practice.

8. Reconstruction of Sidewalks and Streets.

In carrying out any construction work, such as erection of poles, installation of underground conduits, or placing cables, or any other construction work requiring the tearing up of the street or pavement, the Contractor is required to exercise every precaution for the protection of persons and property. Where the surface of a street or pavement has been removed or torn up or in any way modified, the Contractor shall safely cover such opening before sunset of each day and shall clearly indicate the existence of such protected opening by means of not less than two (2) red lanterns, amply provided with oil, so that they shall burn throuhout the night and until morning.

Any portion of the existing pavement or street which is so removed must be replaced or repaved, or repaired, in a neat, workmanlike manner, and in such a way as to conform in method of construction and appearance and in every other way with the pavement or street so torn up. It is required that this work shall be done immediately and without delay upon the completion of the construction work which necessitated tearing up the street or pavement. Such repairs must be made entirely at the Contractor's expense, and to the entire satisfaction of the Direc-

tor or his representative. Where the roadway or pavement has been torn up to a sufficient depth to in any way modify the foundations of the roadway or pavement, then the Contractor is required to readjust, refill and refinish all such streets or pavements, so long as in the opinion of the Director, the settling of earth or pavement foundation shall render this necessary.

It is agreed that if the Contractor should fail to faithfully perform such repair work to streets or pavements, in strict accordance with this part of the Specifications, and within reasonable time, the Director shall make such repairs at the expense of the Contractor, and this expense shall be deducted from such payments as may then be due the Contractor, or from such payments as may become due the Contractor.

EQUIPMENT

9. Arc Lamps.

All arc lamps herein specified shall be of the latest model of the type known as "luminous arc," or "metallic flame arc," or "magnetite arc." These shall be located, as specified, under the heading of "Lamp locations," appearing later in these specifications, and at such points as are given in the list of arc lamp locations also appearing in these specifications.

These arc lamps are to be arranged for operation in series on a 4-ampere circuit. The average power consumption for each lamp shall be 310 watts and no lamp shall consume less than 305 watts, measured at the lamp terminals. Each lamp shall have a strongly built, durable, copper casing protecting its operating mechanism. This casing shall have a black, oxidized, external finish.

The electrodes employed in each lamp shall be two (2) in number. One of these, namely the upper,

shall be of copper, and shall be of standard form. The other, namely the lower, shall be of what is known as "magnetite." This lower electrode having a most important bearing upon the quantity of light emitted by the arc lamp, it is required that the Contractor shall employ in the operation of these lamps, as the lower electrode, only such electrodes as are known as "high efficiency electrodes;" and it is agreed that the Contractor shall not employ for the lower electrode, in any of the arc lamps whatsoever provided under these Specifications, electrodes of the type commonly known as "long life electrodes," and same will not be acceptable, as they are greatly inferior to the "high efficiency electrodes" herein specified.

The electrodes herein specified shall be cylindrical in form, and shall have a diameter of approximately eleven-sixteenths (11-16) of an inch, and a length of approximately nine and one-half (9½) inches.

All arc lamps supplied by the Contractor under these Specifications shall burn with a steady, uniform light, without undue flickering and without hissing.

10. Arc Lamp Globes.

All arc lamps shall be provided with a clear glass globe which shall completely surround the arc, and a prismatic refractor which shall be effective in refracting the light emitted by the arc in such a manner as to give a distribution of light as called for in these Specifications.

11. Incandescent Lamps.

All incandescent lamps called for in these Specifications shall be of the Tungsten filament, gas filled, high efficiency type. The old style, vacuum Tungsten filament lamp being inferior to the high

efficiency, gas-filled lamp, its use will not be permitted under the terms of these Specifications. All Tungsten lamps shall be supported from brackets or span suspensions, as called for in these Specifications.

12. Tungsten Lamp Reflectors and Globes.

All Tungsten lamp fixtures herein called for shall be provided with a reflector whose reflecting surface shall be of white porcelain, mounted on a suitable metal support. Each reflector shall be what is known as the "concentric ring" reflector, and the diameter shall be eighteen (18) inches for all lighting units up to and including 100 candle power size, and the diameter shall be twenty (20) inches for all units above 100 candle power size. Every Tungsten lamp covered by these Specifications shall be installed in such relation to this reflector as will result in the greatest possible amount of light being reflected from the lamp to the street surface.

Every Tungsten lighting unit shall be provided with a prismatic refracting, enclosing globe of such size as shall be standard for each unit, and of such form and refractive powers as to give the light distribution as called for in these Specifications.

13. Distribution of Light.

All arc lamps herein called for shall be provided with such electrodes and glassware, and shall be maintained in such condition as to give not less than the following distribution of light, when operated at a current of four (4) amperes and consuming 310 watts at the lamp terminals, as herein specified. The distribution of light required from these arc lamps, under these conditions, shall be as follows:

With the lamp suspended so as to bring the arc to a distance of twenty-two (22) feet from the street surface, and with a condition of no obstruc-

tion in the path of the light, the lamp shall show a mean lower hemispherical candle power of not less than 530; and under the same conditions, the lamp shall produce a luminous intensity at an angle of ten (10) degrees below the horizontal plane passing through the arc which shall average not less than 1200 candle power; and under the same conditions, the lamps shall produce an illumination of not less than .05 foot-candles at a distance of 150 feet from the lamp.

The incandescent lamps called for in these Specifications shall be equipped with such reflectors and prismatic, refracting, enclosing globes as to produce not less than the following distribution of light, when operated under normal conditions of current, and with no obstacles in the path of the light.

The 60 candle power unit shall show a mean lower hemispherical candle power of 55; and a luminous intensity, at an angle of 10 degrees below the horizontal plane passing through the filament of 100 candle power; and a normal illumination at a distance of 100 feet from the lamp, and when the lamp is suspended 18 feet from the street, of .009 foot-candles.

The 100 candle power size shall give a mean lower hemispherical candle power of 90; and a luminous intensity, at an angle of 10 degrees below the horizontal plane passing through the filament of 160 candle power; and an illumination at a distance of 100 feet from the lamp, and when the lamp is suspended 18 feet from the level of the street of .015 foot-candles.

The 250 candle power size shall give a mean lower hemispherical candle power of 210; and a luminous intensity, at an angle of 10 degrees below the horizontal plane passing through the filament of 360; and an illumination, at a distance of 150 feet from the lamp, and when the lamp is suspended at

a height of 22 feet from the level of the street of .016 foot-candles.

The 400 candle power size shall give a mean lower hemispherical candle power of 290; and a luminous intensity at an angle of 10 degrees below the horizontal plane passing through the filament of 725 candle power; and an illumination, at a distance of 150 feet from the lamp, and when the lamp is suspended at a height of 22 feet from the level of the street of .031 foot-candles.

The 600 candle power size shall give a mean lower hemispherical candle power of not less than 500; and a luminous intensity, at an angle of 10 degrees below the horizontal plane passing through the filament of 1050 candle power, and an illumination, at a distance of 150 feet from the lamp, and when the lamp is suspended at a height of 22 feet from the street level, of .047 foot-candles.

14. Mast Arms, Brackets and Suspensions Spans.

All lighting units shall be supported from either mast arms, suspension spans, or brackets, and those shall be installed and maintained in a safe and workmanlike manner. They shall be pleasing in appearance, and all metal work, except the wire used in suspension spans, shall be painted with a black, weather-proof paint at intervals of not less than once in every thirty (30) months, in order to maintain a pleasing appearance. At street intersections, either mast arms or diagonal suspension spans shall be used by the Contractor for the purpose of supporting the lighting unit at such locations over the intersection of the median line of the intersecting streets, or in such location as to result in the most favorable possible distribution of light emitted by such unit.

Brackets may be used for supporting lighting units at the entrance to alleys and at locations inter-

mediate between street intersections, and at corresponding points, and in all cases they shall have a length such that the lighting unit is supported not less than four (4) feet from the pole upon which the bracket is mounted; and where trees, poles or other obstacles exist in the neighborhood of the lighting unit brackets of greater length shall be used so that the lighting unit shall be suspended sufficiently far out from the street to allow the light emitted from it to have a free and unobstructed path to the surface to be illuminated.

All mast arms and brackets shall be of high grade, standard construction, and shall be adequately braced and supported, so as to be able to withstand such strains as result from sleet and wind storms.

15. Wires.

The Contractor shall use no wires in his distributing circuits of less than No. 6 Browne & Sharpe guage, and all wires shall have a tensile strength equivalent to not less than hard drawn copper wire. All wire shall be adequately insulated and the insulation shall be equivalent to that provided by what is known as "weather-proof" insulation. All wires shall be strung and maintained in a safe, careful and workmanlike manner.

16. Poles.

All poles used in new construction and reconstruction work shall be high grade, first class, chestnut poles, or the equivalent thereof. They shall be selected and installed in a neat, safe, and workmanlike manner, in accordance with the best, modern engineering practice and with a view to securing a pleasing appearance.

17. Pole Line Material.

The Contractor is required to employ in the construction, installation and maintenance of the distributing system necessary for carrying out the street lighting service herein specified, only the highest grade of pole line material, including pole line hardware, such as bolts, nuts, cross arm braces, guy wire, guy clamps, guy anchors, cross arms and pins, insulators, strain insulators, brackets, tie wire and all other material in any way forming a part of the distributing system; and all the above shall be installed in a neat, safe and workmanlike manner, and with a view to securing a pleasing appearance.

18. Construction Work in General.

In general, all material used, and all construction work done shall be in conformity with the best and most modern engineering practice; and in regard to the clearance between the wires of this lighting system and other wires and other objects; and in regard to the spacing between wires; such rules and regulations and practices as are set forth in the rules of the National Electric Light Association, covering this type of construction, shall be implicitly and faithfully followed by the Contractor, and failure to do this shall be regarded as failure to conform to these Sepecifications, and as failure to abide by the contract.

19. Circuits.

As soon as possible after the contract for supplying the service herein specified shall become in force, and within a period of not more than thirty (30) days therefrom, the Contractor shall supply to the Director a map showing the path and location of each distributing circuit which the Contractor maintains for the operation of the lighting units herein specified, and this map shall show the number and

size and location of each lighting unit on each circuit.

20. Location of Lamps.

All arc lamps shall be suspended at a height of approximately twenty-two (22) feet from the surface of the street, except where the existing trolley wires or other obstructions of like character which cannot be modified, would prevent this; and also, except where the topography of the intersecting streets or existing trees, or other fixed obstacles render a modification of this requirement desirable. Such modifications shall, however, only be made upon the approval of the Director or the Engineer.

All incandescent lamps of sizes larger than 100 candle power shall be hung at a height of eighteen (18) feet from the surface of the street, except that modifications may be made in this requirement in accordance with the above. All incandescent lamps of 100 candle power or less which are mounted on brackets at locations intermediate between street intersections and at the side of the street or roadway shall be placed at a height of not less than fourteen (14) feet and not more than sixteen (16) feet from the surface of the roadway, except upon the approval of the Director or his Engineer.

All lighting units of whatsoever size or type shall be installed in such a manner as to give the most favorable street and sidewalk illumination possible for its particular location, and all such locations shall meeet with the approval of the Director or his Engineer, and all such locations shall, upon written notice from the Director or his Engineer, be modified to the satisfaction of the Director or his Engineer.

21. Geographical Location of Lamps.

The geographical locations of the lighting units shall be as given herein. Where the location of the

lighting unit is stated to be along a given street, and between two points, the lamps shall be placed as near as possible at equal intervals, and in all cases, in the most advantageous position for illuminating the pavement and roadways.

The locations are given according to type.

Magnetite Arc Lamps.

High at Powell
Depot at Buck
Depot at High
Broad at Buck
Broad at High
High Between Broad and Oak
Oak at Buck
Oak at High
High at Vine
High at Mulberry
Pine at High
Pine at Third
Sassafras at High
Sassafras at Second
Sassafras at Third
Main at Buck
Main at High
Main at Second
Smith at High
Smith at Second

600 Candle Power, Gas Filled Tungsten Units.

Main at Cedar
Second at Florence

400 Candle Power, Gas Filled Tungsten Units.

Bridgeton & Millville Turnpike at Sharp.
Main at Middle Ave.
Cedar & Race
Vine and Second

Mulberry and Third
Pine and Fourth
High at Hospital

250 Candle Power, Gas Filled Tungsten Units

Sharp at Cooper
Mulford, 4 spans North of Main
Main at Mulford
Main at Pike
Pike and Morris
Main and Park
Main and Brandriff
Howard and Brandriff
Fulton at Alley northwest of Cedar
Third and Main
Third and Smith
Third and Garrison
Third and Florence
Second at Railroad (bet. Florence and Maylin)
Second and Maylin
Whitall at Third
Fourth and Main
Fourth and Smith
Fourth and Garrison
Fifth and Main
Fifth and Smith
Fifth and Garrison
Main and Sixth
Main and Seventh
Sassafras at Buck
Sassafras and Fourth
Sassafras and Fifth
Sassafras and Sixth
Sassafras and Seventh
Pine and Buck
Pine and Second
Pine and Fifth
Pine and Sixth

Pine and Seventh
Buck and Mulberry
Second and Mulberry
Fourth and Mulberry
Fifth and Mulberry
Sixth and Mulberry
Seventh and Mulberry
Vine and Third
Vine and Fourth
Vine and Fifth
Vine and Sixth
Vine and Seventh
Dock at Oak
Oak and Second
Oak and Third
Oak and Fifth
Oak and Sixth
Broad at Columbia
Broad at Second
Broad at Third
Broad at Fourth
Broad at Fifth
Broad at Eighth
Depot at Powell
Depot at Railroad west of Buck
D Street at Second
D Street at Third
D Street at Fourth
Powell and Archer
Powell and Buck
E Street at Second
E Street at Third
F Street at Second
F Street at Third
F Street at Fourth
G Street at Second
G Street at Fourth and Newton Ave.
Columbia and Green
North and Green

Green and Buck
Green and High
Columbia at McNeal
McNeal and Church
McNeal and North
McNeal and Archer
McNeal and Dock
McNeal and Buck
McNeal and High
Columbia at Foundry
Foundry and Church
Foundry and North
Foundry and Archer
Foundry and Dock
Foundry and Buck
Foundry and High
North and McChesney
Sharp and Columbia
Sharp and Church
Sharp at Archer
High at Trolley Crossing between Sharp and Hospital.

100 Candle Power, Gas Filled Tungsten Units.

On Bridgeton and Millville Turnpike at First Street west of Spruce.
Bridgeton and Millville Turnpike and Spruce
Bridgeton and Millville Turnpike and Larue
Chestnut at Walnut
Park and Howard
Race at Middle Ave.
Second at Whitall
Second at Plum
Second at Noble
High at Noble
Second and Garfield
Garfield, one span west of High
Railroad, south of Florence Avenue, at Third

Railroad, south of Florence Avenue, at Fourth
Railroad, south of Florence Avenue, at Fifth
Florence Avenue at Fourth
Florence Avenue at Fifth
Florence Avenue at Sixth
Smith at Sixth
Smith at Seventh
Garrison at Eighth
Garrison at Ninth
Garrison at Tenth
High at Siding to Millville Manufacturing Co.
High at McChesney
Main at Eighth
Main at Ninth
Main at Tenth
Main at Eleventh
Pine at Eighth
Mulberry at Eighth
Vine at Buck
Vine at Eighth
Oak at Seventh
Oak between Seventh and Eighth
On Dock between Oak and Broad
On Sixth between Broad and Oak
On Seventh between Broad and Oak
On Eighth, 2 lamps equally spaced between Broad and Oak
On Broad at Church
Broad and Dock
Powell and Church
Depot at Street turn between Dock and Powell
E Street & Wheaton Ave.
E Street and Fourth
F Street and Wheaton Ave.
Third and G Street
Church and Green
Archer and Green
Columbia midway between block south from Grove

Grove at Alley between Columbia and Church

60 Candle Power, Gas Filled Tungsten Units.

NOTE: The locations for the lamps of this size are given in groups or runs.

On Cooper, at Larue, at Spruce, at First Street Northwest of Spruce, 3 lamps

On Larue, Spruce, first street northwest of Spruce, (Midway between Cooper and Bridgeton and Millville Turnpike), 3 lamps

On Sharp between Cooper and bridge near Columbia, 10 lamps

Bridgeton and Millville Turnpike from Chestnut to second span from Mulford, 7 lamps

Mulford at second span north of Main, 1 lamp

On Morris between Pike and Park, 1 lamp

Morris and Park, 1 lamp

Morris and Brandriff, 1 lamp

Midway between Morris and Brandriff, 1 lamp

Howard from Mulford to second span from Park, 4 lamps

On Mulford between Howard and Main, 1 lamp

Main between Pike and Park, 1 lamp

Main between Brandriff and Park, 1 lamp

Howard between Brandriff and Park, 1 lamp

Fulton and Park, 1 lamp

Fulton between alley North of Cedar and Park, 1 lamp

Race, one span from Penn, 1 lamp

Race and Park, 1 lamp

Race between Alley and Park, 1 lamp

Main between Brandriff and Cedar, 1 lamp

Cedar from Creek west of Penn (location of present lamp) to second span from Race, 7 lamps

Cedar from Fulton to second span from Main, 5 lamps

Street west of Race at Washington, 1 lamp

Race from Hamilton to second span south of Lee, 5 lamps
Middle Avenue, from second span from Race to second span from Main, 5 lamps
On Second Street from first span south of Smith to second span from Florence, 7 lamps
Second between Florence and Railroad, 1 lamp
Second between Railroad and Maylin, 3 lamps
Second between Maylin and Garfield 3 lamps
Garfield, first span from second to Noble, 3 lamps
High Street North of Garfield, 1 lamp
Noble between High and Second, 1 lamp
Alley between Plum and Noble, at Second, at alley between Second and High and at High, 3 lamps
Plum Street between Second and High 1 lamp
Second Street, first span south of Whitall and alternate spans southward, 6 lamps
On Third, at Maylin, midway between Maylin and Railroad, 2 lamps
On Second, Third, Fourth and Fifth, midway between Florence and Railroad, 3 lamps
On Third, between Garrison and Florence, 2 lamps
On Fourth between Garrison and Florence, 1 lamp
On Third between Smith and Garrison, 2 lamps
On Fourth, Fifth and Sixth between Smith and Garrison, 3 lamps
On Columbia between Buck and Vine, 2 lamps
On Columbia from Railroad on Dock to alley south of Broad, 7 lamps
On Broad, second span east of Columbia and first span west of Dock, 2 lamps
On Sharp between Columbia and Bridge, 3 lamps
On Columbia at street between Sharp and Grove, 1 lamp
On alley between Columbia and Church, midway between Sharp and Grove, 1 lamp

High (Malaga Road) between Sharp and Trolley Crossing, 2 lamps

High (Malaga Road) between Trolley Crossing and Hospital, 2 lamps

High (Malaga Road) between Hospital and West Jersey and Seashore Railroad Crossing, 1 lamp

On Sharp from North Street to first span from Archer, 3 lamps

On Archer from McChesney to first span from Sharp, 3 lamps

On Archer between McChesney and Foundry, 2 lamps

On Foundry between Archer and Dock, 2 lamps

On Sharp and on Foundry between Columbia and Church, 2 lamps

On McNeal between Archer and Dock, 1 lamp

On McNeal between Columbia and Church, 1 lamp

Church, North and Archer, midway between Green and McNeal, 3 lamps

On Green between Columbia and Church, 1 lamp

On Powell between Columbia and Church and between Church and North, 2 lamps

On Smith beginning at High and extending to Sixth, one lamp midway of each block, 5 lamps

On Garrison between Eighth and Ninth, 1 lamp

On Main beginning at Buck and extending to Tenth, one lamp midway of each block, 10 lamps

On Main, second span east of Eleventh and alternate spans eastward, 4 lamps

On Sassafras, beginning at Buck and extending to Seventh, one lamp midway of each block, 7 lamps

On Sassafras at Eighth, 1 lamp

On Pine, beginning at Buck and extend-

ing to Seventh, one lamp midway of each block, 7 lamps

On Mulberry, beginning at Buck and extending to Eighth one lamp midway of each block, 8 lamps

On Vine, beginning at Columbia and extending to Tenth, one lamp midway of each block and one at Ninth, 12 lamps

On Oak, beginning at Buck, and extending to Fifth, one lamp midway of each block, 5 lamps

On Oak between Eighth and Ninth, 1 lamp

On Broad, beginning at Dock and extending to Fifth, one lamp midway of each block, 6 lamps

On Broad between Fifth and Sixth, at Sixth, between Sixth and Seventh, at Seventh, between Seventh and Eighth, between Eighth and Ninth, at Ninth, between Ninth and Tenth, at Tenth and two spans beyond Tenth, 10 lamps

On Depot between Buck and High, 1 lamp

On Powell, on Green, on McNeal, and on Foundry, at midway points between Dock and Buck, 4 lamps

On D Street between Second and Third and Third and Fourth, 2 lamps

On G Street between Third and Fourth, 1 lamp

On Wheaton Avenue, between E and F Streets and between F and G Streets, 2 lamps

On Wheaton Avenue from second span north of G Street, extending northward to one span beyond present arc lamp (on alternate spans), 13 lamps

On Second, beginning at Main and extending to Broad, one lamp midway of each block, 6 lamps

On Third, beginning at Main and ex-

tending to Broad, one lamp midway of each block, 6 lamps

On Fourth, beginning at Main and extending to Broad, one lamp midway of each block, 3 lamps

On Buck between Pine and Mulberry, Oak and Broad, Depot and Powell, 3 lamps

On Fifth, beginning at Main and extending to Vine, one lamp midway of each block, 4 lamps

On Fifth between Oak and Broad, at alley, 1 lamp

On Sixth, beginning at Sassafras, and extending to Mulberry, one lamp midway of each block, 2 lamps

On Seventh between Mulberry and Vine, 1 lamp

On Seventh at first and third spans from Oak to Broad, 2 lamps

On Eighth, beginning at Garrison, and extending to Sassafras, one lamp midway of each block, 2 lamps

On Eighth between Mulberry and Vine, 1 lamp

On Ninth between Harrison and Main, 1 lamp

On Eleventh and on Thirteenth between Main and Sassafras, 2 lamps

Summary

Type of Unit	Number
Magnetite arcs,	20
600 candle power, gas-filled Tungstens,	2
400 candle power, gas-filled Tungstens,	7
250 candle power, gas-filled Tungstens,	93
100 candle power, gas-filled Tungstens,	52
60 candle power, gas-filled Tungstens,	291
Total number of units,	465

Operation

22. Schedule.

The lighting system shall be operated fully in accordance with these Specifications for a period of nominally four thousand (4000) hours per year. The lamps shall be operated all night, every night of the year. The time of lighting shall be from not more than one-half hour after sunset to not more than one-half hour before sunrise. The Contractor shall specify to the Director in his bid the exact time in which he proposes to have the lamps comprising the system fully turned on each night, and the exact time at which he proposes to turn the lamps off each morning, for the remaining days of the current calendar year which the system shall operate at the time the contract becomes in force. It is agreed that not less than one month before the close of the calendar year, the Contractor shall file with the Director a list of the times for lighting the lamps for each day of the ensuing year, and that this shall apply further, for each year that the contract shall be in force, and that the total amount of time which the lamps shall remain lighted shall not be less than four thousand (4,000) hours per year.

23. Inspection and Tests.

The Director or his Engineer shall have the full right and privilege to inspect and test any lighting unit supplied by the Contractor under these Specifications. It is agreed, also that the Director or his Engineer or his representative shall have the right and privilege to make such inspection and tests of the regulating equipment used in connection with this lighting system in the generating station or substation, operated by the Contractor, to supply current for the street lighting service, herein called for. The Contractor shall provide high grade, reliable

ammeters for measuring the current supplied to each circuit upon which the lamps are operated.

It is also agreed that the Contractor shall provide and install in a safe and convenient place in his generating station or sub-station, a suitable, modern series ammeter jack with an ammeter plug and ammeter leads for each circuit, so that current may be read in each and every circuit at any time by the Director or his Engineer or representative, such representative using an ammeter which shall have been recently calibrated by the United States Bureau of Standards. It is agreed that admission to the power plant shall be granted to the Director, or his Engineer or representative, at any time whatsoever during the operating period of the lighting system herein specified, for this purpose only, and that no previous notice on the part of this Director, his Engineer or representative shall be required by the Contractor for such tests, but that such tests shall always be made in the presence of the Contractor's representative who may, at the time such tests are made, be actively engaged in attendance upon the generating and street lighting equipment in operation in the generating station or sub-station.

Tests for wattage, or candle power, or illumination, or any other operating feature of any lighting unit on a given circuit may be made by the Director, his Engineer or representative at such current values as may be read and determined by the tests for current mentioned above, also such tests shall be made in the presence of a representative of the Contractor and under the direction of the Director, his Engineer or representative.

24. Outages and Penalties.

It is hereby agreed and provided that all adjustments and payments for outages and all agreements relating to deductions, for any cause whatso-

ever, shall be in accordance with paragraphs 4 to 8 inclusive, pages 2 and 3 of the contract which is attached hereto.

25. Payments.

It is agreed and provided that all payments due and made to the Contractor in return for services rendered shall be in accordance with the terms of the contract hereto attached.

CONTRACT

for

FURNISHING, MAINTAINING AND OPERATING ELECTRIC LAMPS

for

LIGHTING PUBLIC STREETS, ALLEYS, ROADS AND HIGHWAYS

and

ALL PUBLIC PLACES

in the

CITY OF MILLVILLE, NEW JERSEY.

AN AGREEMENT dated September 21st, 1915, between the CITY OF MILLVILLE, NEW JERSEY, by its Director of Public Safety, party of the first part, and The Millville Electric Light Company, party of the second part.

The parties to these presents, each in consideration of the agreements on the part of the other herein contained, have agreed, and hereby agree, the CITY OF MILLVILLE, NEW JERSEY, for itself and its successors, and the Contractor for himself and his successors and assigns, as follows;—

1st—Whenever in this contract, the words below enumerated are used, they shall severally mean and intend what is set opposite them.

"The City"—THE CITY OF MILLVILLE, NEW JERSEY.

"Director"—The Director of Public Safety of the City of Millville, New Jersey.

"Engineer"—The engineer appointed and employed by the City of Millville

and officially and duly charged to represent said City in connection with and with regard to, the performance and the discharge of the duties imposed by this contract.

"Contractor"—The party of the second part, his successors and assigns.

2nd—The Contractor agrees that beginning on the **first** day of **February, 1916,** and for a term of **five** years thereafter, namely up to and including the **thirty-first** day of **January, 1921,** he will furnish, install, maintain and operate the lamps and equipment, supply the electric current and do and perform all other things hereinafter mentioned, in strict and full accordance with the requirements of the "Instructions to Bidders," the accepted "Bid," and "Specifications" and the "Bond" hereto annexed, each and all of which are hereby made a part of this contract, with like effect as if incorporated herein, and to receive in full payment thereof, the amounts stated in the schedule of prices given in the "Bid," and agreed upon between both parties; and not to demand, sue for, or recover therefor, any compensation beyond the said amounts.

3rd—Time is of the essence of this contract and the Contractor shall carry out promptly each and every order of the Director given pursuant hereto. Neither an extension of time, for any reason, beyond the date fixed for the doing and acceptance of any work shall be deemed a waiver by the City of any right or power received to the City or to any officer or any employee thereof, under the terms of this contract, or of the right to abrogate the same for abandonment or delay in the manner herein provided.

4th—In case the Contractor shall be unable at any time to light any street or public lamp, then he shall give immediate notice to the City Officer at the City Hall of such inability, stating where the lighting cannot be done, and stating also the reason therefor; and in case the lighting of any electric lamps shall be suspended or discontinued in this manner, every effort shall be made by the Contractor to resume the operation of such lamps at the earliest possible moment, by making such provisions in the distributing circuits, or such rearrangement of apparatus in his sub-station or power station, or by any other means which may be necessary in order to restore the service. Notice shall be given by the Contractor, in writing, when such interruption to service is necessary, and also when such interrupted service is restored.

5th—The Contractor shall adopt all reasonable means to inform himself whether any of the public or street lamps herein called for, should fail at any time during the night to burn, or to consume the required wattage. The Contractor shall report promptly to the Director, or the Engineer, all lamps that fail in this way.

6th—If, on any night, any lamps shall fail to burn continuously and uninterruptedly during the prescribed hours, nothing shall be due the Contractor for such lamps, unless he can show affirmatively either (a) that such failure was due to some act or omission on the part of the City, or (b) if an incandescent lamp, that said lamp was burned out or mechanically broken, and was replaced and restored to service within less than three hours of the time of extinguishment and burned continuously during the remainder of the night; and if an arc lamp, that said lamp had ceased to burn through mechanical injury, and was restored to service within less than three hours of the time of extinguishment.

7th—Deductions to be made where lamps fail to burn continuously, or where lamps burn out, but do not consume the full wattage required, shall be as follows:

FIRST—Where lamps are out of service because the Contractor is unable to maintain them lighted, a deduction for the first night of the pro-rata cost per hour, for each hour that each lamp thus fails to be maintained in service; for the second night, and each night thereafter, until the lamps shall be restored to service, a deduction of double the pro-rata cost per hour shall be made for each hour that each lamp is thus out of service. These deductions shall apply to each and every lamp herein agreed upon which the Contractor is unable to maintain in service, provided that, if interruptions to service shall result from acts of God, such as serious storms, the Contractor shall be allowed a period of forty-eight (48) hours from the time of such damage, to make repairs, without extra deductions over and above the pro-rata contract price for each lamp thus out of service.

SECOND—In case a lamp (or lamps) whether arc or incandescent, fails to burn as stipulated in Paragraph 6 of this Contract, or is relighted in less than three hours of the time of extinguishment and remains continuously lighted during the remainder of the night, the Contractor shall be entitled to one-half the contract price for such lamp for the night on which such conditions apply.

THIRD—Where lamps fail to burn, due to interruption of the supply in the generating or substation, such interruptions being only momentary, there shall be no deduction from the contract price.

FOURTH—In case any lamp, (or lamps) shall be found by tests to be operated at a reduced wattage, or to be emitting a reduced amount of light,

or to be supplying a reduced amount of illumination below that specified, the cost of said lamp (or lamps) to the City, for any and all such nights, shall be reduced to one-half the contract price, unless it shall be found that the reductions in any of the above mentioned quantities is as great as fifty per cent. of the required value. If the reduction shall be fifty per cent. of the required value, nothing shall be due the Contractor for any lamps showing such delinquencies for the nights to which the said delinquencies apply.

The performance and operating condition of any or all lamps supplied under the terms of this contract shall be determined by test in the manner prescribed and set forth under the paragraph entitled "INSPECTION AND TESTS" which appears in the Specifications forming a part of this Contract.

Any sum of money deducted from the amount due the Contractor from the City or retained by the City under this section of the contract is hereby agreed and determined to be liquidated damages and not a penalty.

FIFTH—It is agreed that the Director will notify the Contractor of all lamp outages which may come to his notice in order that such lamps may be quickly restored to service; provided that this shall not be construed as relieving the Contractor of carefully inspecting the lamps and employing all reasonable means to maintain each and all of them in service.

8th—Each and every feature of the execution of this contract, including the lamps, the location of the lamps, and the current supplied and the operation and maintenance of the whole lighting system herein called for, shall be subject to the inspection and approval of the Director or his Engineer.

9th—To prevent disputes and litigation as to

the number of lamps to be paid for under this contract, and as to all questions in relation to their quality and quantity, the terms of this contract and the specifications have been made clear and definite, and shall be followed in every particular by the Contractor. Any questions which may arise which are not covered by this contract and the specifications may be settled either by referring such matters to the arbitration of three (3) disinterested persons, one selected by the City, one by the Contractor and a third by the other two; or by referring the matter to the Board of Public Utility Commissioners of the State of New Jersey at the discretion of the parties hereto; and their decision shall be final.

10th—On and after the first day of each calendar month, the Contractor shall furnish proof to the satisfaction of the Director that he has fully performed each and every provision of the contract during the preceding month. Said proof shall be furnished in such form and shall contain such details as the Director shall prescribe, including the following:

That the required current has been supplied to each and every circuit comprising the whole lighting system; and that all lamps provided for the lighting of the streets, alleys, roads, highways and public places have been maintained at the required wattage, efficiency or candle power, and that such lamps have been kept clean and properly attended. The Contractor, or his representative, shall make affidavit, under oath, to this effect, and no payment shall be made or allowed on account of any item, except for the time during which all the requirements of this contract shall have been fully performed. Before payments shall be made, all outages for the month preceding shall be reported and summed up and deductions made therefor, in accordance with the terms of this contract. As soon as the Director

is satisfied as to the amount due the Contractor for all the duties performed by him during the preceding month the Director shall certify the fact, and in his certificate shall state such amount as the Contractor is entitled to for his services, and shall requisition the City Treasurer to pay the Contractor the full amount so specified, within a period of fifteen days from the time the Contractor's affidavit as to services rendered has been filed with the Director. With such certificate and requisition, the Contractor shall not be or become entitled to payment under, or in respect to the terms of this contract, or for lighting service rendered or which may have been rendered in said preceding month.

It is expressly provided that the City may at any time retain out of any amount due the Contractor by this contract, all such sums of money as by the terms of this contract, or by law, or by any ordinance of the City it is, or may be, authorized to retain.

11th—The City shall not, nor shall any department or officer thereof, be precluded or estopped by any return or certificate made by the Director, or his representative, or any other officer, agent or appointee, under any provision of this contract, from, at any time, (either before or after completion and acceptance of the work, and payment therefor, pursuant to any such return or certificate) showing the true and correct amount of the service rendered by the Contractor, or any other person under this contract, or from showing at any time that any such return or certificate is untrue or incorrect or improperly made in any particular, or that the lighting units supplied or the service rendered in lighting the city streets do not, in fact, conform to the specifications; and the City shall not be precluded or estopped, notwithstanding any such return or certificate and payment in accordance herewith, from demanding and

recovering from the Contractor such damages as it may sustain by reason of the Contractor's failure to comply with the terms of this contract.

12th—The Contractor will indemnify and save harmless, the City, its officers, agents and servants, and each of them against and from all suits and actions, or from claim and taxation brought against them, or any of them, including suits based on or arising out of the alleged infringement of any patent or patent right, and against and from all damages and costs to which they, or any of them may be put by reason of such alleged infringement, or by reason of injury to the person or property of another which may result from negligence or carelessness in the performance of the work under this contract or otherwise; or from any improper or defective material, machinery, implement, or appliances used by the Contractor in the performance of the duties covered by this contract; or from conductors or electric current; or any act or commission or omission of the Contractor, or his agents or servants, except that liability for injury to person or property which may occur as a result of tests of the lighting equipment or system conducted by the Director's Engineer or representative, shall be borne by the City, provided, however, that such injury shall have been caused by and result from any act or acts of negligence of the Director's representative. If such injuries shall not have been caused by negligence on the part of the Director or his Engineer or representative, then the Contractor shall assume all liability for same.

So much of the moneys due the Contractor under this contract, as shall, or may be deemed necessary by the Director, may, at his option, be retained by the City, until any and all such suits or claims may have been settled, and until evidence of that fact shall have been furnished to the Director to his entire satisfaction.

13th—The Contractor shall not assign, transfer, convey, or sublet, or otherwise dispose of this contract, or any part thereof, or his right, title or interest in it, or any part thereof, without the previous consent, in writing, of the Director endorsed hereon or hereto attached; or the Contractor shall not assign by power of attorney, or otherwise, any of the moneys due, or to become due and payable under this contract, unless by and with the like consent of the Director, to be signified in like manner. No right under this contract or to any money to become due hereunder, shall be asserted against the City, either in law or in equity, by reason of any so-called assignment of this contract, or any part thereof, or of any moneys due it or to grow due hereunder, unless said assignment shall have been authorized, as aforesaid, by the written consent of the Director. Provided that nothing herein contained shall be construed to hinder or prevent or affect an assignment by the Contractor for the benefit of his creditors, should the occasion for said assignment arise, and should such assignment be made pursuant to the statutes of the State of New Jersey.

14th—If the service to be rendered to the City by the Contractor, under this contract shall be abandoned by the Contractor, or if this contract shall be assigned, or the work sub-let by the Contractor otherwise than as herein specified, or if at any time the Director or the Engineer fully appointed by the Director, shall be of the opinion, and shall so certify in writing and furnish proof thereof that the performance of the contract is in any way not faithfully and fully performed in every detail and particular, in accordance with the specifications and the contract; or that the Contractor is violating any of the conditions or covenants of this contract; or, if the Contractor is executing the same in bad faith or not, in accordance with the terms thereof, the Direc-

tor shall notify the Contractor by written notice and shall apprise and inform him of these facts. Thereupon, the Director shall have power to cause the Contractor to discontinue work and the Director shall be empowered thereupon to contract with other parties for the proper and faithful completion of the work herein called for, or to place such persons as he may deem advisable, by contract, or otherwise, to perform the service herein described; and the Director may use such equipment, materials and apparatus as he may find upon the line extending over the streets, alleys and highways of the City, for the satisfactory performance of the service herein called for. The expense so incurred shall be deducted from all moneys due the Contractor from the City, and from such moneys as shall become due the Contractor from the City. In case such expense shall exceed the amount which would have been payable to the Contractor if this contract had been faithfully executed by the Contractor, then the Contractor shall pay the amount of such excess to the City; and further, in case the expense so incurred would have been less than the amount which would have been payable under this contract, if the same had been faithfully executed by the Contractor, he shall forfeit all claim to the difference or remainder. Further, when any particular part of the service herein called for is being performed by the Director, either by new contract or otherwise, under the provisions of the above clause, the Contractor shall in no wise hinder or interfere with the persons or workmen employed by the Director in carrying out any part of the work or in executing the service called for in this contract.

15th—In carrying out any construction work, such as installation of poles, underground conduits, stringing of wires, mounting of cross-arms, or any other construction work necessary for the satisfac-

tory completion of this contract, the Contractor may remove such portions of existing pavements, dig such holes for poles, install such underground conduit or piping, in any street or alley or public place, subject to the provisions of the laws and ordinances now in force within the limits of the City, and subject also to such laws or ordinances and regulations as the governing body of the City shall, from time to time establish in relation to such work, provided due notice be given to the Director or his Engineer or representative, not less than twenty-four (24) hours before such work is to be done. All earth removed must be replaced before sunset of the day on which the opening is made, and thoroughly tamped as the same is thrown into the trench or excavation. Any portion of the existing pavement which it may be necessary to remove must be replaced or repaired in a neat, workmanlike manner, and in such a way as to conform with construction and appearance and in every other way with the pavement so torn up, and within such time as the Director may direct. Pavements or roadways must be restored at the Contractor's expense to a condition as good as that existing before any of the work herein mentioned was begun, and the Contractor shall readjust, re-fill and re-finish each street or roadway or pavement in any public place which it has been necessary for him to open, so long as, in the opinion of the Director, the settling of earth or pavement which was thus caused by the opening shall render this necessary. Any failure on the part of the Contractor to faithfully perform the repair work and replacement required, as herein specified, within a reasonable time, shall be followed by the execution of such replacement or repair work to the public streets, roadways or pavements, by the Director, and all such repairs shall be at the expense of the Contractor, and the money required to meet this expense shall be deducted from such moneys as may have been, or at

any time will become due to the Contractor from the City.

16th—The Residence or place of business of the Contractor certified to in the bid, upon which this Contract is founded, is hereby designated as the place where all notices, including letters and other communications, shall be served, mailed or delivered. Any notice addressed to the Contractor at such place, and either there delivered or deposited, in a postpaid wrapper or envelope, in any postoffice box regularly maintained by the United States, shall be deemed sufficient service of said notice upon the Contractor. The residence or place of business named may be changed at any time by an instrument in writing, executed and acknowledged by the Contractor and delivered to the Director. Nothing herein contained shall preclude or render inoperative service of any notice upon the Contractor by delivering it either to any of his officers or to his representative in charge of any part of his generating or distributing equipment. It is understood by the parties that the alternate Bid, a copy of which is attached was not accepted by the City.

IN WITNESS WHEREOF, the Director of Public Safety of the City has hereunto set his hand and seal on behalf of the City, and the Contractor has caused his name to be signed hereto by his President or Vice President, and has further caused his corporate seal to be affixed and attested by his Secretary at the City of Millville, New Jersey, the date and year first above written. These presents have been executed in three original parts, one to remain

with the Director, one to be delivered to the City Clerk for the records, and one to the Contractor.

THE CITY OF MILLVILLE, NEW JERSEY,

By ROLAND B. CORSON, L. S.
Director of Public Safety.

MILLVILLE ELECTRIC LIGHT CO., Contractor,

By EUGENE B. GOODWIN, L. S.
Vice-President.

(SEAL)

Attest: WALTER OWEN,
Secretary.

CITY OF MILLVILLE, NEW JERSEY, s.s.:

On this twenty-second day of September, 1915, before me personally appeared Roland B. Corson, to me known, and known to me to be the Director of Public Safety, the person described in and who executed the foregoing instrument, and who acknowledged to me that he executed same as Director, for the purposes herein mentioned.

LEWIS H. MILLER,
Master in Chancery of N. J.

CITY OF MILLVILLE, NEW JERSEY, COUNTY OF CUMBERLAND, s. s.:

On this twenty-first day of September, 1915, before me personally came Eugene B. Goodwin, to me known, and known to me to be the Vice President of the Millville Electric Light Company, the corporation described in and which executed the foregoing contract, and Walter Owen, to me known, and known to me to be the Secretary of said corporation, who being by me severally and duly sworn, did depose and say each for himsef as follows:

The said Eugene B. Goodwin that he resided in Millville, New Jersey, that he is the Vice President of said corporation: the said Walter Owen that he resided in Millville, New Jersey, that he is the Secretary of said corporation: that he knew the seal of said corporation: that the seal affixed to the said instrument was said corporate seal, that it was so affixed by order of the Board of Directors of said corporation: and that by like order he thereto signed his name and official designation.

WILBERT R. GOODWIN,
(Seal) Notary Public.

BOND

KNOW ALL MEN BY THESE PRESENTS THAT the Millville Electric Light Company, a corporation of New Jersey, hereinafter referred to as the "Contractor," and the American Surety Company of New York, hereinafter referred to as the "Surety" are held and firmly bound unto the CITY OF MILLVILLE, NEW JERSEY, in the sum of Five Thousand Dollars, lawful money of the United States of America, to be paid to the CITY OF MILLVILLE, NEW JERSEY, or its City Solicitor, or its successors or assigns, for which payment, well and truly to be made, we bind ourselves and our several and respective heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

Sealed with our seals, dated this twenty-first day of September, 1915.

WHEREAS, The above bounded "Contractor" by an instrument under his corporate seal, duly attested, bearing even date with these presents, and one part whereof annexed, has contracted with THE CITY OF MILLVILLE, NEW JERSEY, to furnish lighting for the public streets, alleys and all public places in the said City, and to properly maintain and supply and operate said lighting system, in accordance with the specifications forming a part of the contract, and to perform all other obligations called for by said contract, and to keep such lamps and the whole lighting system in good order and in first-class operating condition, as in said contract will more fully and at large appear;

NOW THEREFORE, the conditions of the above obligation are such that if the said Contractor, his successors and assigns shall indemnify and save harmless THE CITY OF MILLVILLE, NEW JERSEY, its officers, agents and servants and each

of them against and from all suits and actions of every name and description brought against them or any of them, including suits and actions based on, or arising out of the alleged infringement of any patent or patent rights and against and from all damages and costs to which they or any of them may be put by reason of another, resulting from negligence or carelessness in the performance of the work to be done under said contract or otherwise, or from any improper or defective material, machinery, implement or appliance used in fully performing the service called for in the contract; or from any act or omission of the said Contractor or his agents or servants; and if the said Contractor, or his successors or assigns shall well and truly and in a good, sufficient and workmanlike manner perform faithfully, observe and keep the said contract and each and every of the covenants, provisions and terms in the said contract contained, or to be performed, fulfilled, observed and kept, then this obligation is to be null and void; otherwise this obligation is to remain in full force and virtue.

MILLVILLE ELECTRIC LIGHT CO., Contractor.

By EUGENE B. GOODWIN,
(Seal) Vice President.

Attest: WALTER OWEN,
Secretary.

AMERICAN SURETY COMPANY OF NEW YORK

Attest: By EDW. P. BARLEY,
Resident Assistant Secretary.

CITY OF MILLVILLE, NEW JERSEY, COUNTY OF CUMBERLAND, ss:

On this twenty-first day of September, 1915, before me personally came Eugene B. Goodwin, to me known and known to me to be the Vice President of the Millville Electric Light Company, the corporation described in and which executed the foregoing instrument, and Walter Owen, to me known and known to me to be the Secretary of said corporation, who, being by me severally and duly sworn, did say, each for himself, as follows;

The said Eugene B. Goodwin, that he resided at Millville, New Jersey and was the Vice President of the said corporation; and the said Walter Owen, that he resided at Millville, New Jersey, and that he was the Secretary of said corporation, that he knew the corporate seal affixed to the foregoing instrument was said corporate seal, that it was so affixed by order of the Board of Directors of said corporation, and that by like order he thereto signed his name and official designation.

WILBERT R. GOODWIN,
Notary Public.

Extract from the Record Book of the Board of Trustees of the AMERICAN SURETY COMPANY OF NEW YORK.

The first meeting of the Board of Trustees of the American Surety Company of New York, after the annual Stockholders' meeting, was held at the office of the Company, No. 100 Broadway, New York City, on Tuesday, January 19, 1915, at eleven o'clock A. M.

The Secretary read the report of the Nominating Committee as follows:

To the Board of Trustees of the

AMERICAN SURETY COMPANY OF NEW YORK

Gentlemen;

The Committee appointed by the Executive Committee of this Company at their meeting held Tuesday, December 8, 1914, for the purpose of nominating * * * * officers of the company, * * * * for the ensuing year, and until their successors are elected, beg leave to report as follows:

We nominate for— * * * * *

	Resident Vice Presidents	Resident Asst. Secretaries
Philadelphia, Pa.	Samuel S. Sharp	Robert R. Benedict
	William R. Nicholson	Edw. P. Bailey
	Robert R. Benedict	M. E. Neville
	Edw. P. Bailey	A. C. Robinson
	Harris J. Latta	C. B. Weed, Jr.
	C. B. Weed	Leo H. Carpenter
		H. S. Tiel
		Clement Tingley
		Howard Hagar
		Jos. A. Mackle
		Frederick K. Stull.

WHEREUPON, it was

RESOLVED, that the Secretary be authorized to cast one ballot on behalf of the Trustees present, for the members of the Executive Committee, Fi-

nance Committee, Committee on Accounts, Committee on Capital Box, Officers and Counsel, as recommended by the Nominating Committee for the ensuing year and until their successors are elected; which was done, and thereupon the aforementioned persons were declared to have been unanimously elected to their respective offices for the ensuing year and until their successors are elected.
The following resolution was adopted:

RESOLVED, that the Resident Vice Presidents be, and they hereby are, and each of them is hereby authorized and empowered to execute and to deliver and to attach the seal of the Company to any and all obligations for or on behalf of the Company, such obligations, however, to be attested in every instance by a Resident Assistant Secretary.

STATE OF NEW YORK }
County of New York } ss.

I, D. H. Cook, Assistant Secretary of the American Surety Co. of New York, do hereby certify that I have compared the foregoing extracts and transcripts from the Record Book of the Board of Trustees of the American Surety Company of New York, with the original record of said Board, and that the same are correct extracts and transcripts therefrom as they appear of record and are set forth and contained in said Record Book; and I further certify that I have compared the foregoing resolutions with the records thereof, as recorded in the Minute Book of said Company, and do certify that the same is a correct and true ranscript therefrom, and of the whole of said original resolutions; and that the said resolutions have not been revoked or rescinded.

Given under my hand and the seal of the Company, at the City of New York, this 30th day of January, 1915.

D. H. COOK,
Assistant Secretary.

AMERICAN SURETY COMPANY OF NEW YORK

Financial Statement, June 30, 1915.

Resources.

Real estate	Home office bldg. and land, unencumberes,	3,200,000.00	
	N. Y. City Water Front, unencumbered,	215,000.00	3,415,000.00
Stocks and Bonds, Market Value 6-30-15			3,897,952.60
Mortgage and Collateral Loans, Judgments and Decrees,			115,414.74
Cash in Banks and Offices,			678,349.62
Premiums in course of collection		786,577.66	
Less amt. 3 mos. or more old,		330,311.02	456,266.64
Accrued Interest and Rents,			49,474.22
Salvage Recoverable,			223,025.02
			8,836,482.84

Liabilities.

Capital Stock,	5,000,000.00
Surplus,	802,630.25
Reserve for Re-insurance,	2,054,971.86
Reserve for Contingent Claims,	752,559.99
Reserve for Expenses and Taxes,	168,428.14
Re-insurances and Accounts Payable, not due,	22,299.55
Premiums paid in advance,	35,593.05
	8,836,482.84

Special Deposits, required by insurance laws of various States, not considered.

BID

for

FURNISHING, MAINTAINING AND OPERATING ELECTRIC LAMPS

for

LIGHTING PUBLIC STREETS, ALLEYS, ROADS AND HIGHWAYS

and

ALL PUBLIC PLACES

in the

CITY OF MILLVILLE, NEW JERSEY.

NOTICE: The bidder must be amply and thoroughly prepared for supplying the service bid for, and must have sufficient capital for carrying out the work, and must satisfy the Director or the Engineer as to his general fitness for supplying the service bid for, provided the contract should be awarded him.

TO THE DIRECTOR OF PUBLIC SAFETY, MILLVILLE, NEW JERSEY:

The bidder hereby declares that his corporate name and that the place and location of his business and executive offices, and the place and location of his operating headquarters are as given at the close of this bid; and the bidder declares that the following are the names of all persons or corporations with him interested as proprietors or owners, or in a supervisory or executive capacity;

MILLVILLE ELECTRIC LIGHT COMPANY, incorporated under the laws of the State of New Jersey.

And the bidder declares that no other corporations or persons, other than the above mentioned, are so interested. The bidder also declares that his bid is offered without any connection with any other person or corporation who may also be offering a bid under the specifications herein referred to.

The undersigned hereby also declares that he has thoroughly and carefully examined the specifications for supplying the street lighting and lighting of all public places of the City of Millville, New Jersey; that he has carefully read the "Instructions to Bidders," that he has familiarized himself with the contract which must be entered into with the City of Millville, New Jersey, by the successful bidder for this work; that he is familiar with the bond which the successful bidder must supply as a guarantee, to the City of Millville, of the faithful performance of the service. And the undersigned further declares that he is prepared and amply qualified to supply the service specified; to enter into the contract and to file the bond; and in each and every particular to carry out, in spirit and in letter, the undertaking of supplying the aforesaid lighting service to the City and to the entire satisfaction of the Director of Public Safety; or the Director or representative duly appointed by the City or Director, for the following sums, to-wit;

(NOTE: the prices herein quoted are for the operation of all lamps on a basis of four thousand (4000) hours per year, and these prices cover magnetite arc lamps consuming a total of 310 watts at the terminals, using high efficiency electrodes, concentric reflectors, and prismatic, refracting, enclosing globes. All incandescent lighting units will be provided with radial wave reflectors and prismatic, refracting, enclosing globes; and all incandescent lamps will be of the latest form of the Tungsten filament, high efficiency, gas filled type.

The entire lighting service will be in full accordance with every detail of the contract and specifications.)

20	Magnetite arc lighting units	@ $55.00	each; total,	$1100.00
2	600 candle power lighting units	@ $48.00	each; total,	$96.00
7	400 candle power lighting units	@ $38.00	each; total,	$266.00
93	250 candle power lighting units	@ $27.00	each; total,	$2511.00
52	100 candle power lighting units	@ $18.00	each; total,	$936.00
291	60 candle power lighting units	@ $15.50	each; total,	$4510.50
			Total,	$9419.50

ALTERNATE BID

20	Arc Lighting units as described below @ $55.00 each; total,	$1100.00
2	600 candle power lighting units @ $48.00 each; total,	$96.00
7	400 candle power lighting units @ $38.00 each; total,	$266.00
93	250 candle power lighting units @ $27.00 each; total,	$2511.00
52	100 condle power lighting units @ $18.00 each; total,	$936.00
291	60 candle power lighting units @ $15.50 each; total,	$4510.50
	Total	$9419.50

No alternate bid offered by the bidder will receive consideration unless the information called for below shall be fully and clearly given by the bidder, in the form of a guarantee of performance of the arc lighting units bid upon under the alternate bid. The incandescent lamps bid upon under the alternate bid shall be the same as those offered under the first bid.

The bidder shall state fully the technical and engineering details and operating features which he is willing to guarantee for the arc lighting units upon which he offers an alternate bid. It will be inadequate and insufficient for the bidder to merely state that any lamps bid on will be equipped with such electrodes, reflectors and globes as to give standard distribution of light, as called for by the manufacturers, fo rthe reason that most manufacturers have a variety of standard types of arc lamps, and a variety of combinations of electrodes and globes and reflectors which might be employed under such a guarantee.

Therefore the bidder shall give the following information as a guarantee, if the alternate bid shall be accepted by the City, which guarantee shall form a part of the contract and specifications for the lighting service herein referred to:

1—Type of arc lamp and important construction details.

Series Alternating Current Type "H" Flame Carbon Arc Lamp. Suspension type lamp is cased in heavy copper finished in dull black, and is insect

and weather proof. Lamp is equipped with auto transformer for use on 6.6 ampere circuit.

2—Name of Manufacturer and manufacturer's type number or form or catalog number.

Westinghouse Electric and Manufacturing Company. Style No. 189629—Cat. 3001—Sect. DS-720.

3—Type, kind dimensions, designation, of all electrodes to be used, together with name of manufacturer of same.

A homogeneous, impregnated carbon 7-8 by 14 inches is used in this lamp. Only upper carbon is renewed when trimming, the stub from the upper is cut to proper length and used for new lower. Carbons are supplied by the Westinghouse Electric and Manufacturing Company, and can be furnished either to produce a white or yellow light as desired.

4—Approximate hours of life of electrode.

110 hours.

5—Type of globe to be used with lamp.

Sperical outer and conical inner globe of suitable design are used. The globes may be of clear or diffusing glass.

6—Type of reflector to be used with lamp, if any is used.

No reflector used.

7—Current at which lamp operates.

Current at lamp terminals, 10 amperes.

8—Normal operating voltage at lamp terminals.

55 volts.

9—Watts to be supplied at lamp terminals.

550 watts.

10—Watts consumed by arc.

392 watts.

11—Most desirable elevation above street at which each lamp shall be suspended.

25 to 30 feet.

12—Mean lower hemispherical candle power of complete lamp.

880 white carbon.

13—Candle power at angle of ten (10) degrees below horizontal plane through arc.

1200 white carbon.

14—Illumination in foot-candles at distance of 150 feet from lamp when lamp is hung at best elevation above street level, as stated in (11).

Clear Glass globe—.06

Alba Glass globe—.06

MILLVILLE ELECTRIC LIGHT CO., (Bidder)

By S. J. FRANKLIN,
General Manager.

Residence or place of business—No. 233 High Street.

Operating headquarters—Millville, N. J.

(Seal)

Attest: WALTER OWEN, Secretary.

(NOTE: Where bidder is a corporation, bid must be signed in the name of the corporation by some duly authorized officer or agent thereof, having knowledge of the matters stated in the bid, and such officer or agent shall also subscribe his own name. As for example, A. B. C. Company, by E. F. Blank, President. The Seal of the corporation shall also be affixed.)

CITY OF MILLVILLE, NEW JERSEY, COUNTY OF CUMBERLAND, ss:

S. J. Franklin, being duly sworn, says: I am the General Manager of the above named corporation whose name is subscribed in the foregoing bid and reside at No. 118 North Second St., Millville, N. J. I am duly authorized by the above named corporation to subscribe to this bid, and have full knowledge of the several matters therein stated, and they are in all respects true.

S. J. FRANKLIN.

Subscribed and sworn to before me this seventeenth day of September, 1915.

WILBERT R. GOODWIN,
(SEAL) Notary Public.

EXHIBIT R—10

MILLVILLE ELECTRIC LIGHT COMPANY

SUMMARY OF ESTIMATED COST OF REPRODUCTION

	Prices as of Jan. 1, 1923. Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
I. Acct. No. 101—Land devoted to Elec. Operation	$23,500	$23,500
II. Acct. No. 107—General Equip.	1,069	625
III. Acct. No. 108—Dams, Canals and Pipe Lines	6,936	4,275
IV. Acct. No. 109—Power Plant Buildings	25,885	19,230
V. Acct. No. 110—Furnaces, Boilers, and Accessories,	45,275	33,207
VI. Acct. No. 111—Steam Engines,	36,399	18,279
VII. Acct. No. 112—Turbines and Water Wheels,	3,346	1,673
VIII. Acct. No. 115—Electric Generators,	17,454	9,402
IX. Acct. No. 116—Accessory Electric Power Equipment	21,756	19,553
X. Acct. No. 117—Miscellaneous Power Plant Equipment	4,963	3,544
XI. Acct. No. 120—Poles and Fixtures	38,668	34,793
XII. Acct. No. 123—Distribution System	23,381	21,222
XIII. Acct. No. 124—Line Transformers and Devices	11,789	11,087
XIV. Acct. No. 125—Electric Services	9,087	8,512
XV. Acct. No. 126—Electric Meters	12,242	10,955
XVI. Acct. No. 127—Electric Meter Installations	946	849
XVII. Acct. No. 128—Municipal Street Ltg. System	21,729	19,070
XVIII. Acct. No. 132—Electric Tools and Implements	225	191
XIX. Acct. No. 133—Electric Laboratory Equipment	336	286
XX. Omissions and Contingencies, 3%	9,149	7,208
Totals	$314,117	$247,461
XXI. Indirect or Overhead Costs		
1. Preliminary and Organization Costs, 2% of Item XXI.	6,282	4,949
2. Administration Costs, 2% of Item XXI.	6,282	4,949
3. Engineering and Superintending 6% of Item XXI.	18,847	14,848

4. Taxes and Insurance, 1½% of Item XXI.	4,712	3,712
5. Loss of Interest during Construction, 3½% of Item XXI. and preceding overheads	12,643	9,960
Totals, Indirect Costs	$48,786	$38,418
Working Capital		
1. Material and Supplies	$5,447	$5,447
2. Cash	20,780	20,780
Going Concern Value	50,000	50,000
	$439,110	$362,106
Property Owned but not used in Electric Operations		
Acct. No. 101—Land	2,500	2,500
Acct. No. 109—Timber Dents	1,200	800
Acct. No. 115—Elec. Generators	610	190
Acct. No. 116—Transformers	1,838	910
	$6,148	$4,200

DETAILS OF REPRODUCTION ESTIMATE

Item		Reproduction Cost New	Prices as of Jan. 1, 1923. Reproduction Cost New Less Accrued Depreciation
	Acct. No. 101, Land Devoted to Electrical Operation.		
1.	Irregularly shaped plot of ground, approximately 308 x 342 ft., containing approximately 232 acres, adjoins gas plant and occupied by new steam plant.	$2,500	$2,500
2.	Rectangular shaped plot 113 x 115 ft. at Sharp Street and Canal Bridge, containing approximately 0.33 acres.	1,000	1,000
3.	Water rights on Maurice River including right of way for the water discharged from water wheels.	20,000	20,000
	Total Acct. No. 101	$23,500	$23,500
	Acct. No. 107, General Equipment		
1.	1 Ford light body truck, 1914 model	406	200
	1 Ford light body truck, 1917 model	363	200
	Miscellaneous Furniture and fixtures	300	225
	Total for Account No. 107	$1,069	$625

Item		Prices as of Jan. 1, 1923. Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
	Acct. No. 108, Dams, Canals, and Pipe Lines.		
1.	1 water intake from canal, approximately 17 x 22 ft. with masonry wall, 22in. thick, average 11 ft. high, 3 in. flooring, iron screen, 17 x 10 ft., 2 gates of 3 in. wood, hand operated by rack and pinion with wooden housing 22 x 14 x 8 ft. 6 in. and fencing.	1,012	760
2.	1 3-8 in. riveted steel flume, 60 in. diameter x 155 ft. long, laid underground from forebay to water wheels and supported by 2 18 in. cast iron columns	3,670	1,835
3.	1 tail race, 15 ft. wide, 90 ft. long with retaining walls of masonry, 36 in. thick x 8ft. high	2,844	1,680
	Total for Acct. No. 108	$6,926	4,275
	Acct. No. 109, Power Plant Buildings Hydro-Electric Plant		
1.	1 one story brick building, 57 x 35 ft. 6 in. x 10 to 13 ft. high with basement adjoining building, housing Electric Water Company equipment; masonry foundations, brick walls, cement floor in basement, tongued and grooved wooden (first) floor and siding; wood window sashes and doors, tar on tin roofing on wood sheathing, 8 x 20 ft. wood monitor; electric light and steam heat.	4,450	3,240
2.	1 Frame lean-to over water wheels, 36 ft. 6 in. x 22 ft. 6 in. x 11 ft. 6 in. high, masonry foundations, west wall brick, south wall wood sheathing (no north or east walls) cement floor on wood sheathing, electric lighting and steam heating systems	961	720
3.	One story brick building 36 x 36 x 13 ft. and 16 ft. high with basement, housing water company equipment; masonry foundations, brick walls (no east wall) cement floor in basement 8 ft. below first floor which is tongued and grooved,		

		Prices as of Jan. 1, 1923. Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
	wood window sashes and doors, tin roofing on wood sheathing, with tongued and grooved lining.	3,626	2,480
4.	1 one story frame building 50 x 16 x 15 ft. to square with 3 ft. rise (adjoining brick building, housing electric equipment) containing heating boiler for supplying steam heating system for all buildings in the group; wall of 1 in. boards on wooden frame roofing, rubberoid on 1 in. boards, floor brick, wood window sashes and doors, electric lights, steam heat, no basement, no north wall.	836	382
5.	1 100 HP. horizontal return tubular boiler, operated at 15 lb. steam pressure for heating system.	1,800	500
6.	1 2 ft. diameter steel stack, 50 ft. high, guyed on brick base, 6 x 6 x 6 ft. and masonry foundation, 10 x 10 x 13 ft.	708	364
7.	1 one story frame building 60 x 34 x 15 ft. to square with 6 ft. rise (adjoining building housing steam boiler for heating) containing water company filters; walls of 1 in. boards on wooden frame; roofing, ruberoid on 1 in. boards; floor timber; wood window sashes and doors; electric light, steam heat, no basement, no north or south walls.	2,148	1,180
8.	1 one story frame lean-to 20 x 42 x 23 ft. housing water company equipment; situated between shed housing water wheels and building for water company filters, walls of 1 in. boards on wood framing, rubberoid roofing on 1 in. boards, cement floor, no basement, no north or east walls.	1,369	752
	Total Hydro-Electric Plant,	$15,696	$9,608
	Steam Plant.		
9.	1 concrete block building 115 x 42 x 23 ft. to eaves and		

		Prices as of Jan. 1, 1923. Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
	39 ft. to gable; concrete block walls including dividing wall between engine and boiler room except east wall which is tar paper on wood sheathing, wood trusses and iron tie rods, maple floor in engine room and cement floor in basement and boiler room; wood window sashes and doors, double hipped roof, wood stairs with pipe railing, electric lighting.	10,017	9,450
	Net additions 1922	178	172
	Total Steam Plant	10,189	9,692
	Total Acct. No. 109,	25,885	19,230
	Acct. No. 110, Furnaces, Boilers and Accessories. Steam Plant		
1.	2 Babcock & Wilcox boilers, 192 4 in. tubes, 18 ft. long; 2 42 in. drums 1-2 in. thick, built for 200 lbs. maximum pressure, 400 HP. each, hand fired; operated at 135 lbs. pressure; installed in pressed brick setting with Diamond soot blowers, hand operated dampers, one boiler equipped with Huber hand operated stokers, complete installed.	26,066	16,900
2.	2 boiler feed pumps, Deane Pump Company, 12 x 7 x 10 in., No. 27938, horizontal duplex, plunger type, end packed; concrete foundations.	1,008	550
3.	1 automatic damper regulator	103	58
4.	1 feed water heater, 60 in. high x 36 in. square, Webster, open type, 600 HP. with iron stand and concrete foundation.	971	625
5.	1 Hays automatic CO2 recorder, No. 985, Paul B. Huyette Co., Philada.	362	308
6.	1 stack 1-4 in. steel, 100 ft. high, 72 in. diameter, double guyed on footing of pressed brick 12 ft. square x 40 ft. high with fire brick breeching 6 x 4 ft. 8 in. x 22 ft. long, 9 in. walls, supported on boiler setting and 9 in. I-beams on 3-8 in. cast iron columns 7 ft. long.	3,776	3,130

Item		Prices as of Jan. 1, 1923. Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
7.	1 hot well (new) 5 ft. 3 in. x 8 ft. 3 ft. deep with 10 in. concrete walls and 10 in. concrete floor, abandoned in 1922.	73	58
8.	1 automatic combustion control for two boilers "Gray System" made by Automatic Fuel Saving Co., containing the following equipment: 1 air receiving tank, 12 in. diameter x 5 ft. long 1 air pump (Union Pump Company) 2 1 in. Mason automatic regulating valves 2 14 in. turbine blowers 1 cabinet Complete installed	1,811	1,730
9.	Power plant piping including steam exhaust, condenser, boiler feed, cooling basin, city water supply, drain lines, complete installed with covering and fittings.	9,825	8,180
10.	1 Portable Machinery Co. coal conveyor, 16 x 24 in., Type A with motor, complete installed	653	653
11.	2 Republican flow meters, complete installed	825	825
	Total Acct. No. 110,	$45,275	$33,207
Item	Acct. No. 111, Steam Engines. Steam Plant		
1.	1 Rice & Sargent steam engine, 18 x 36 x 32 in. stroke, horizontal cross compound Corliss valve, 750 HP., 100 r.p.m., operating under 135 to 140 lb. steam pressure complete with throttle valve, oiling system, direct connected to generator with receiver and automatic stop; on concrete foundation.	25,000	10,000
2.	1 12 x 12 in. horizontal automatic high speed steam engine, 275 r.p.m. made by Ames Iron Works, complete with throttle valve, steam separator on concrete foundation (this engine is direct connected to Eddy exciter.)	2,428	500

		Prices as of Jan. 1, 1923. Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
3.	2 centrifugal pumps, Goulds Mfg. Co., No. 3030, size 8, 1340 gals. per minute, 10 in. suction 8 in. discharge, 1170 r.p.m., 36 ft. head, direct connected to motor on iron base and concrete foundation.	1,590	1,436
4.	1 cooling basin, 80 x 52 x 6 ft. 6 in. concrete walls 2 ft. thick at base, tapering to 6 in. at top, with 12 in. concrete floor including 5 and 6 in. cast iron piping and fittings and 24 1 1-4 Schutte & Koerting Co. nozzles.	3,950	3,760
5.	1 Multi-Jet condenser, Schutte & Koerting Co., No. 35—1-2, 36 in. vacuum.	2,027	1,825
6.	1 vacuum trap, Strong's, 1 1-2 in.	127	100
7.	1 oil separator, 20 in. exhaust line, made by Harrison Safety Boiler Co.	450	405
8.	1 Oil Supply System Bowser Co., No. 4F3, 1000 HP., 90 gallon filter tank, 119 gallon drip tank.	550	495
9.	1 American Steam Engine Indicator with outside spring and 1 planimeter.	210	210
10.	1 oil pump, Worthington Vertical Single Acting, 2 x 3 x 2 in. for oil lubricating system.	58	49
	Total Acct. No. 111,	36,399	9,500

Item Acct. No. 112, Turbines and Water Wheels.

Hydro-Electric Plant

1.	1 90 HP. reaction water wheel, horizontal, Seyelene-Jonesville inlet 38 x 60 in., single row of guides and blades,, 7 in. shaft, ball governor, cast iron casing supported by lugs resting on steel beam construction over tail race and 1 60 HP. water wheel similar to above and direct connected to it	3,346	1,673

Item	Acct. No. 115, Electric Generators.	Prices as of Jan. 1, 1923. Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
	Hydro-Electric Plant		
1.	1 alternating current generator, General Electric Co., 300 K. W., Type ATB, Form P, 2300 volts, 450 r.p.m., with 42 in. paper faced, 36 in. face pulley and 1 36 in. diameter x 8 in. solid steel pulley; all on concrete foundation.	5,510	4,130
2.	1 continuous current generator, General Electric Co., 14 K. W., 1175 r.p.m., shunt wound, H161030, Type CO15, Form AIC42, 125 volts, full load, 112 amps., on adjustable base; used as exciter for 300 K. W. generator, belt driven, on concrete foundation	418	314
3.	1 brush arc light generator, No. 9 1-2, C-627, 2 circuit, 8000 volts 700 r.p.m., 100 arc light capacity with 22 in. diameter, 12 in. paper faced pulley on concrete foundation, complete with 1 Thompson arc meter, 11 amps., and 3 single pole, single throw knife switches on wooden panel.	2,765	1,383
	Total Hydro-Electric Plant	8,693	5,827
	Steam Plant		
4.	1 alternating current generator, General Electric Co., 500 K. W., Type ATB, Form E, Class 48-500A-150, revolving field engine type, 3 phase, 60 cycles, direct connected to 750 H. P. engine.	5,405	2,162
5.	1 exciter, 50 K. W., Eddy multipolar, 125 volts, 275 r.p.m., 400 amps., Type VI, No. 9663, direct connected to Ames engine on some foundation.	1,501	300
6.	1 motor generator set used as exciter to 500 K. W. generator: 1 50 H. P. induction motor, Type C, Westinghouse, 3 phase, 60 cycle, 850 r.p.m.,		

Item		Prices as of Jan. 1, 1923. Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
	Serial No. 311178, 220 KMF, 125 amps. per term. 1 Bullock generator, Bullock Elec. Mfg. Co., No. 14953, 120 volts (full load), 292 amps., 850 r.p.m. All on concrete foundation, 7 x 5 x 10 ft. and complete with auto starter 3 phase, 220 volts, 60 cycles, 35-50 H.P., No. 290472, West.	1,855	1,113
	Total Steam Plant	8,761	3,575
	Total Account No. 115,	17,454	9,402
Item	Acct. No. 116, Accessory Electric Power Equipment.		
	Hydro-Electric Plant		
1.	3 300 K. V. A., Westinghouse transformers, single phase, 60 cycles, 6600-2300 volts, on concrete foundation.	3,100	2,800
2.	3 regulating transformers for series incandescent lamps, 34 K. V. A., 2200 volts primary, 6.6 amps.	1,741	1,567
3.	1 mercury arc rectifier, General Elec. Co., Type MS, Form B, 20 K. W., 1100 primary volts, 4000 rectified volts, 5 amps., 60 cycles.	1,389	972
4.	1 auto transformer, 30 K. V. A., 2200 volts to 1100 volts.	195	133
5.	1 switchboard, 11 panels, 2 sections, each 2 in. thick, total height 88 in. with varying width of panels; total length of switchboard=18 ft. 6 in. for control of arc machine and mercury arc rectifier, arc lamp and incandescent light circuits, 300 K. W. generator, motors on pumps, feeder from bleachery, incoming 500 K. V. A. circuit, 5 trans., etc., with full equipment of voltmeter, ammeters, wattmeters, circuit breakers, voltage regulators, etc., completely installed.	8,622	8,191
6.	20 2300 volts Garton & Daniels lightning arresters.	126	100
7.	22 50 amp. Garton & Daniels choke coils, Type AF.	188	155
8.	2 direct current Westinghouse lightning arresters	84	71

		Prices as of Jan. 1, 1923. Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
	9. Station wiring, including insulators, cleats, brackets, etc.	1,600	1,360
	Total Hydro-Electric Plant	17,045	15,340
	Steam Plant		
10	10. 1 induction motor, 40 H. P., West., Type CS, 220 volts, 60 cycles, 3 phase, 1170 r.p.m., on iron base with centrifugal pumps.	415	370
	11. 1 switchboard, 3 panels, 88 in. high x 56 in. wide, 2 in. block slate for control of 500 K. W., 6600 volt generator, 6600 volt circuit and exciters for generator, with full equipment of ammeters, voltmeters, wattmeters, circuit breakers, switches, etc., completely installed.	2,100	1,890
20	12. 3 25 K. V. A. transformers, Type SK, 6600-220 and 110 volts, on concrete foundations	798	720
	13. 1 electrolytic lightning arrester, Type AK, 5200 to 7260 volts, 3 phase, with 3 horn gap, 6600 volts and 3 choke coils.	648	584
	14. Station wiring, including insulators, cleats, brackets, etc.	750	640
	Total Steam Plant	4,711	4,204
	Total Account No. 116	21,756	19,553
	Acct. No. 117, Miscellaneous Power Plant Equipment.		
30	Total Acct. No. 117	4,963	3,544
	Acct. No. 120, Poles and Fixtures.		
	Poles		
	1. 20 25 ft. chesnut poles	194	
	289 30 ft. chestnut poles	3,413	
	940 35 ft. chestnut poles	14,015	
	163 40 ft. chestnut poles	3,206	
	120 45 ft. chestnut poles	2,676	
	4 50 ft. chestnut poles	101	
	Total Poles	23,605	21,244
	Guys		
	2. 193 head guys	1,316	
	48 anchor guys	491	
	47 stub guys	620	

	Prices as of Jan. 1, 1923. Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
25 stub and anchor guys	293	
12 arm guys	33	
Total Guys	2,753	2,478
Crossarms		
3. 292 6 pin single crossarms	768	
1275 4 pin single crossarms	2,998	
583 2 pin single crossarms	1,143	
265 6 pin double crossarms	1,505	
780 4 pin double crossarms	3,994	
251 2 pin double crossarms	1,089	
Total Crossarms	11,495	10,345
Miscellaneous Brackets		
270 guard arms	59	
245 break arms	186	
975 No. 145 single J brackets	341	
430 iron screw pins	56	
118 iron pole brackets	65	
4 6 pin steel arms	18	
390 cob pins	58	
140 wood brackets	24	
Total Miscellaneous Brackets	807	726
Total Acct. No. 120,	38,660	34,793
Acct. No. 123, Distribution System.		
1. Conductors		
31,303 lbs, No. 6 B&S TBWP copper	8,327	
7,311 lbs. No. 4 B&S, TBWP copper	1,945	
24,052 lbs. No. 2 B&S,TBWP copper	6,400	
13,215 lbs 1-0 B&S, TBWP copper	3,516	
Total Conductors	20,188	18,339
2. Insulators		
8,604 West. 251,670 white and brown porcelain	2,052	
628 West. 195,160 white porcelain	232	
3,641 West. 195,138 glass porcelain	474	
174 West. 318,993 spspension type	435	
Total Insulators,	3,193	2,883
Total Account No. 123	23,381	21,222
Acct. 124, Line Transformers and Devices		
Transformers		
2200-110-220 Volts:		
6 1 K. W.	228	
6 1 1-2 K. W.	252	
6 2 K. W.	294	
5 2 1-2 K. W.	265	
29 3 K. W.	1,624	
2 4 K. W.	136	

	Prices as of Jan. 1, 1923.	
	Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
27 5 K. W.	1,944	
6 7 1-2 K. W.	546	
9 10 K. W.	990	
7 15 K. W.	1,022	
1 20 K. W.	202	
4 25 K. W.	828	
2 30 K. W.	538	
6600-110-220 Volts		
1 30 K. V. A.	271	
3 37 1-2 K. V. A.	948	
3 75 K. V. A.	1,434	
Total Transformers	$11,522	$10,860
Line Devices		
12 Burke horn gap type lightning arresters	33	
27 Garton & Daniels pole type lightning arresters	205	
11 transformer cutouts, 6600 volts	29	
Total Line Devices	267	227
Total Account No. 124,	11,789	11,087
Acct. No. 125, Electric Services		
25 3 wire services of No. 6 TBWP. copper wire, 90 ft. average length	275	
1070 2 wire services of No. 6 TBWP. copper wire, 90 ft average length.	8,812	
Total Account No. 125	9,087	8,512
Acct. No. 126, Electric Meters.		
Meters on Line		
110 Volt, Single Phase		
605 5 amp.	5,118	
108 10 amp.	1,069	
14 15 amp.	150	
10 20 amp.	118	
23 25 amp.	300	
18 30-50 amp.	287	
5 60-75 amp.	103	
7 80-100 amp.	158	
1 120-150 amp.	23	
2 200 amp.	46	
2 300 amp.	47	
	7,419	6,306
220 Volt, 3 Phase:		
2 10 amp.	61	
3 15 amp.	96	
7 25 amp.	241	
5 30-50 amp.	228	
3 60-75 amp.	157	

	Prices as of Jan. 1, 1923. Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
2 80-100 amp.	126	
1 120-150 amp.	85	
2 300 amp.	89	
1 600 amp.	82	
Total Meters on Lines	1,167	993
Meters in Stores		
100 Volt, Single Phase:		
13 5 amp.	110	
6 10 amp.	59	
5 15 amp.	54	
3 25 amp.	39	
3 50 amp.	48	
2 75 amp.	42	
2 100 amp.	45	
3 120-150 amp.	68	
	465	465
220 Volts, 3 phase:		
1 5 amp.	28	
1 25 amp.	34	
1 50 amp.	46	
1 75 amp.	52	
	160	160
Miscellaneous		
23 glass covers	20	
19 metal covers	14	
	34	34
Additions 1922		
279 5 amp.		
5 15 amp.		
2 20 amp.		
3 25 amp.		
1 50 amp.		
1 100 amp.		
Total Meters Added in 1922	2,997	2,997
Total Acct. No. 126,	12,242	10,955
Acct. No. 127, Electric Meter Installations.		
1123 Meter Installations	946	946
Acct. No. 128, Municipal Street Lighting System.		
Brackets and Miscellaneous Material		
353 4 ft. brackets	2,132	
117 7 ft. brackets	1,126	
144 mast arms	3,267	
11 span suspensions	164	
	6,689	5,792
Lamps and Fixtures.		
292 60 c.p. complete with 18 in. reflectors and small reflectors	2,812	

		Prices as of Jan. 1, 1923. Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
	175 100-150 c.p. complete with 18 in. reflectors and small reflectors	1,705	
	118 250-280 c.p. complete with 20 in. reflectors and small reflectors	1,448	
10	8 400-600 c.p. complete with 20 in. reflectors and small reflectors	179	
	2 600-1000 c.p. complete with 20 in. reflectors and small reflectors	48	
	29 General Electric, Form 17, 4 amp. luminous arcs, complete with refractor and clear globe	1,140	
		7,332	6,200
	Wire		
	24,140 lbs. No. 8 TBWP copper wire	6,320	5,690
	5,218 lbs. No. 6 wire including insulators	1,388	1,388
20		7,708	7,078
	Miscellaneous Tools, etc.	225	191
	Total Account No. 128	21,729	19,070
Item	Acct. No. 132, Electric Tools and Implements Acct No. 133 Electric Laboratory Equipment.		
	1 Macbeth illuminometer and miscellaneous equipment	336	286
	Acct. No. 152, Materials and Supplies.		
	431 gross tons of bituminous coal, 759 gross tons	5,447	5,447

30 DETAIL OF REPRODUCTION ESTIMATES
PROPERTY OWNED BUT NOT USED IN ELECTRIC OPERATION

Item			
	Account No. 101.		
1.	1 irregularly shaped plot approximately 343 x 215 ft., adjoining plot occupied by steam plant and containing approximately 1.57 acres	2,500	2,500
	Account No. 109.		
2.	14 timber bents purchased for coal trestle which has not been built	1,200	600
	Account No. 115		
3.	1 direct current generator, General Electrict Co., Type		

	Prices as of Jan. 1, 1923. Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
IB, No. 14821, Class 225-1900, Form 8, 125 volts, 1900 r.p.m., 25 K. W.	493	160
1 direct current generator, General Electric Co., Type CO2, No. 137362, 2000 r.p.m, 2 1-4 K. W., 125 volts	117	30
	610	190
Account No. 116.		
4. 2 induction feeder regulators, 16 1-2 K. W., single phase, 60 cycles, 2200 volts primary voltage, automatic, motor operated	1,620	810
1 high efficiency transformer, 15 K. V. A., 1100-110 volts, Pittsburg Trans. Co.	218	100
	1,838	910
Total Property Owned but not used in Electric Operations	6,148	4,200

IN CHANCERY OF NEW JERSEY

Between:

City of Millville,
Complainant,

and

Millville Electric Light Company,
Defendant.

On Bill for Injunction. Hearing at return of order to show cause.

MEMORANDUM.

LOUIS H. MILLER, Esq., for complainant.

HON. LEWIS STARR, for defendant.

LEAMING, V. C.:

I am unable to discern any existing necessity for this court to intervene at this time in the matter of rates of the Millville Electric Light Company.

Subdivision (h) of Section 16 of the Public Utility Act (Sum. to Comp. Stat. p. 1280) expressly empowers the Board of Public Utility Commissioners to order the suspension of proposed increased rates for a period of three months pending hearing touching the reasonableness of such proposed increased rates. Accordingly, it is clearly within the power of the present board to suspend the schedule of proposed increased rates filed by defendant February 23, 1921, should it determine to do so.

Under these circumstances there appears to be no necessity for the intervention of this court at this time to afford by its process of injunction the very relief which can be afforded by a statutory tribunal created for the specific purpose, and now fully equipped to afford.

I will advise an order dismissing the order to show cause.

Submitted: March 21, 1921.

Determined: March 31, 1921.

Alfred N. Barber,
Secretary Board
Public Utility Commissioners,
State House, Trenton,
New Jersey.

April 2 1921.

Rates Millville Electric Co.

Dear Sir:

I beg to acknowledge receipt of your letter dated April 1, 1921, notifying me that the Board has declined to suspend the increased schedule of rates filed with your board on or about February 24th.

I have executed what directions were given to me by the govering body of the city of Millville with respect to the attempt to put into operation the increased schedule of rates.

I will submit to them at their next meeting the opinion of the Vice Chancellor, copy of my telegram to your Board and also a copy of the letter sent by your board to me. If the Board of Commissioners of Millville desire me to take any further proceedings before the Board of Public Utility Commissioners of course I will be very glad to take their instructions.

Yours very truly,

LOUIS H. MILLER,

City Solicitor of Millville.

EXHIBIT R—11

REPORT NO. 1814
ON
MILLVILLE ELECTRIC LIGHT COMPANY
TO
MILLVILLE ELECTRIC LIGHT COMPANY
OF
MILLVILLE, N. J.

March third,
Nineteen twenty-two.

June twenty-sixth,
Nineteen twenty-two.

Millville Electric Light Company,
Millville, New Jersey.

Gentlemen:

Complying with your request we have made an investigation of the property and facilities of your Company in connection with the question of the reasonableness of the rates now in effect and under review by the Board of Public Utilities Commissioners of the State of New Jersey. Our report which sets forth in detail the matters investigated, and our conclusions with respect thereto, may be summarized as follows:

Corporate History

The Millville Electric Light Company was incorporated on December 14, 1891, under the laws of the State of New Jersey.

The total authorized capital stock was $50,000, consisting of 500 shares at $100 each par value. There has been no increase in capital stock nor have any bonds been issued. At the present time the total authorized capital stock is outstanding.

The Company is one of a group of four operated by the same management from one general office, as follows:

1. Millville Electric Light Company
2. Cumberland County Gas Company
3. Millville Water Company
4. High Pressure Construction and Supply Company.

We have made no investigation of any of the other three companies of the group nor their relations one to another except in the most general way. The first three companies are public utilities and furnish light and power, gas and water service in the City of Millville and immediate vicinity. The High Pressure Construction and Supply Company keeps the stocks of materials and supplies except coal and meters, sells all appliances and does all construction work for the other three companies for which it makes certain charges covering the cost of labor and materials, overheads and profits. There is no contract between the Millville Electric Light Company and the High Pressure Construction and Supply Company and we believe that a formal agreement should be executed setting forth the services to be performed by the High Pressure Construction and Supply Company and the basis of compensation for same.

Property and Territory Served

The property consists of a hydro-electric power plant with a 300 KW. generator driven by two water wheels with combined horse power of 150, a steam driven electric power plant with 500 KW. generator

together with transmission, distribution and municipal street lighting systems. There is a connection with the power plant of the Millville Manufacturing Company where energy is purchased in cases of emergency. As of January 1, 1922, there were 795 customers.

The output and sales for the year 1921 are shown by the following tabulation:

OUTPUT			SALES		
			Municipal Lighting	319,869	KWH.
			Commerical "	348,762	"
Hydro Plant	533,995	KWH.	Commercial Power	847,651	"
Steam "	657,200	"	Used by Company		
Purchased	867,660	"	and Unaccount for	542,573	"
Totals	2,058,855	"		2,058,855	"

At the time of our investigation the property was in a good operating condition.

The territory served is the City of Millville and immediate vicinity. Millville had a population in 1920 of 14,690. It has a number of small factories, four large glass works, and the cotton mill and bleachery of the Millville Manufacturing Company. It is connected by a street railway with Vineland, six miles distant and Bridgeton, eleven miles distant. These three cities and their environs comprise one of the most thickly populated districts of southern New Jersey and there are good prospects of a large increase in the business of the Millville Electric Light Company.

Franchises and Rates

The original franchise ordinance granted by the town of Millville in 1891 was for a period of three years only and has never been renewed or extended. The Company, however, is under the jurisdiction of the Board of Public Utility Commissioners of the State of New Jersey and any new franchise would be subject to the approval of that body.

After a study of the present rate structure, we conclude that there is no discrimination between classes of customers. Considered as a whole and from the point of view of net Earnings, the rates are too low to net the Company a fair return on the value of its property under present operating conditions. On the other hand, we do not believe that they can be increased without making the cost of service too high from the point of view of increasing the business.

Balance Sheet

A summary of the balance sheet as of December 31, 1921, compiled from data supplied by the Company and not verified by us is as follows:

ASSETS		LIABILITIES	
		Capital Liab.	$53,900.00
Capital Assets	$347,132.62	Current "	308,217.61
Current "	33,993.27	Other "	27,725.60
Other "	21.09	Surplus & Res.	8,696.23
Total	$381,146.98	Total,	$381,146.98

A study of the balance sheet immediately suggests the desirability of a financial program leading to a readjustment of liabilities. Capital assets amount to $347,132.62 compared with capital Liabilities of $53,900. Current Assets are only $33,993.27 while Current Liabilities are $308,217.81. Of the latter total, $276,449.52 are due to Walter Wood who controls the Company through ownership of 259 shares of its capital stock.

Earnings and Expenses

A study of the earnings and expense statement compiled from data supplied by the Company and not verified by us shows that the Balance Applicable to Dividends and Surplus was a deficit each year since 1910 with the exception of 1915 when there was a credit of $1,076.46.

Prior to 1920 earnings and expenses were comparatively small. During the period from 1911 to

1919 inclusive, Gross Operating Revenue increased from $16,855.39 in 1911 to $52,790.79 in 1919. Operating Expenses increased from $10,804.44 in 1911 to $40,989.40 in 1919. The Balance after depreciation and fixed charges varied from a minimum deficit of $802.38 in 1915 to a maximum deficit of $9,683.69 in 1918.

In 1920 the present steam driven generating plant was placed in operation. In that year Gross Operating Revenue increased $50,143.34 over 1919 but at the same time Operating Expenses increased $96,085.83, resulting in a deficit balance after depreciation and fixed charges of $64,460.36. A part of this deficit was brought about because the charges to the Gas Company for steam were lower than the actual cost of making same by about $10,000.

In 1921 Gross Operating Revenue increased $7,859.92 over 1920, Operating Expenses decreased $14,396.07 and Non Operating Revenue increased $25,279.87, resulting in a deficit after depreciation and fixed charges of $11,487.01. The low increase in Gross Operating Revenue and the large increase in Non Operating Revenue was due to including revenue from sale of steam to the Cumberland County Gas Company under Operating Revenue in 1920 and under Non Operating Revenue in 1921. (We are informed that the revenue from sale of steam was included under Operating Revenue in the annual report to the Board of Public Utility Commissioners for 1921. This report was not yet completed at the time of our investigation.) The decrease in Operating Expenses was due principally to reductions in the cost of coal. The decrease in sales of electrical energy during this year over 1920, was offset by an increase in rates effective March 1, 1921. The balance after depreciation and fixed charges for this year was a deficit of $9,724.10 increased by certain surplus adjustments to $11,487.01.

As pointed out in the report no rental is paid by the Millville Water Company for the use of certain property of the Millville Electric Light Company; also, the charges to the Cumberland County Gas Company for steam have not included anything for taxes, depreciation or fixed charges. If effect is given in the 1921 statements to appropriate charges for these items and to increased revenue if the rate increases had been in effect for the full year, the deficit for the year is reduced to approximately $500. (We are advised that beginning January 1, 1922, the charges for steam have included depreciation, overhead costs, return on investment and profit.)

Valuation

We have made an inventory of the property of the Millville Electric Light Company as of January 1, 1922, from which we have prepared an estimate of the cost of Reproduction New and Cost of Reproduction New less Accrued Depreciation based on prices for labor and materials as of the date of the inventory and certain allowances for overhead costs and Going Concern Value as set forth in the report. From the estimates made as outlined above we have prepared similar estimates based on prices for labor and materials as of the period in which the property was built by the application of appropriate price trend factors.

A comparison of fixed capital as of December 31, 1921, with our reproduction estimates is as follows:

		Cost of Reproduction New	
	Fixed Capital as of Dec. 31, 1921	Prices as of Jan. 1, 1921	Average Prices as of the Period in which Property was Built.
Physical Property		$346,649	$321,578
Overhead Costs	$347,133	53,391	49,533
Working Capital	23,488	23,488	23,488
Going Concern Value	50,000	50,000	50,000
Totals	$420,621	$473,528	$444,599

If accrued depreciation is deducted the above totals become

Fixed Capital plus Working Capital and Going Concern Value	$340,359
Cost of Reproduction New Based on Prices as of Jan., 1921	403,369
Cost of Reproduction New Based on Average Prices during Period in which Property was built	380,400

After careful consideration of all the elements involved, including the fixed capital accounts, reproduction estimates, including going concern value, the practice of the Board of Public Utility Commissioners and certain decisions of the New Jersey Supreme Court, we are of the opinion that the fair value of the property of the Millville Electric Light Company for rate making purposes is in excess of $400,000, bearing in mind that the Board of Public Utility Commissioners alone has the power to fix such value.

Capitol Requirements

From our studies of the existing conditions we conclude that the demand on the system in 1922 will exceed the generating capacity of its power plants and it will be necessary to purchase a portion of the requirements from the Millville Manufacturing Company at 3 cents per KWH. at the switchboard of that company plus a fixed charge of $12.50 per month. Production costs in the steam plant of the Millville Electric Light Company have been in excess of 4 cents per KWH. These high costs immediately raise the question of the desirability of a more modern plant large enough to supply the total requirements in excess of the capacity of the hydro plant. We believe that the business has been sufficiently developed, taking into consideration future

growth, to warrant the construction of such a plant.

We recommend the installation at the present steam plant of a 1,000 KW. turbo-generator together with a new 400 HP. boiler and necessary auxiliary equipment. In considering the type of turbine consideration must be given to the steam requirements of the Cumberland County Gas Company. These requirements at the present time amount to about 215,000 pounds of steam per day and are supplied by high pressure steam from the boilers of the Light Company. Since this steam is reduced in pressure before being used in the gas plant it would be economical from the point of view of combined operation to utilize a bleeder type of turbine, in which a portion of the steam entering the throttle valve would be extracted at an intermediate stage, where the pressure is about ten pounds, for use in gas making.

For the above and certain other minor improvements at the hydro plant and for extensions and improvements to the distribution system we estimate that a total expenditure of $121,390 will be required as follows:

Steam Plant	$79,140
Hydro Plant	1,290
Distribution System including Meters and Services	40,960
Total	$121,390

Respectfully submitted,

DAY and ZIMMERMAN, Inc.,

H. R. MARTZ,
Engineer.

HRM:EA

REPORT NO. 1814
ON
MILLVILLE ELECTRIC LIGHT COMPANY
TO
MILLVILLE ELECTRIC LIGHT COMPANY
OF
MILLVILLE, N. J.

Philadelphia, Pa.
March third,
Nineteen twenty-two.

INTRODUCTION

In accordance with your instruction we have made an investigation of the property and facilities of the Millville Electric Light Company, the activities of which Company include the production, transmission and distribution of electrical energy in the City of Millville, N. J., and its immediate vicinity.

The Millville Electric Light Company is one of a group of four companies operated by the same management from one general office. We have made no investigation of any of the three other companies nor of their relations one to another except in the most general way.

We have not made an audit of the Company's books and the financial and operating statements presented in the report are based upon data furnished by the Company and accepted by us as correct.

Our previous report on this property, No. 1486, contains a detailed inventory or schedule of the various items of plant and equipment as of January 1,

1920. In preparing an inventory as of January 1, 1922, we have used the old inventory as a basis, making the necessary corrections for additions and retirements. The corrections are based on our own inspection and on data supplied by the officers of the Company and verified by us.

We have made a study of the conditions existing at the two power plants of the Company in connection with the requirements of the system and present certain conclusions relative to the operating efficiency of the plants and their immediate capital requirements.

We have not made a new business survey and all data presented relative to future increases in sales was obtained from the officers of the Company.

SCOPE OF REPORT

The report is divided into nine sections as follows:

I. Corporate History

II. Description of Property and Territory Served

III. Franchises and Rates

IV. Balance Sheet

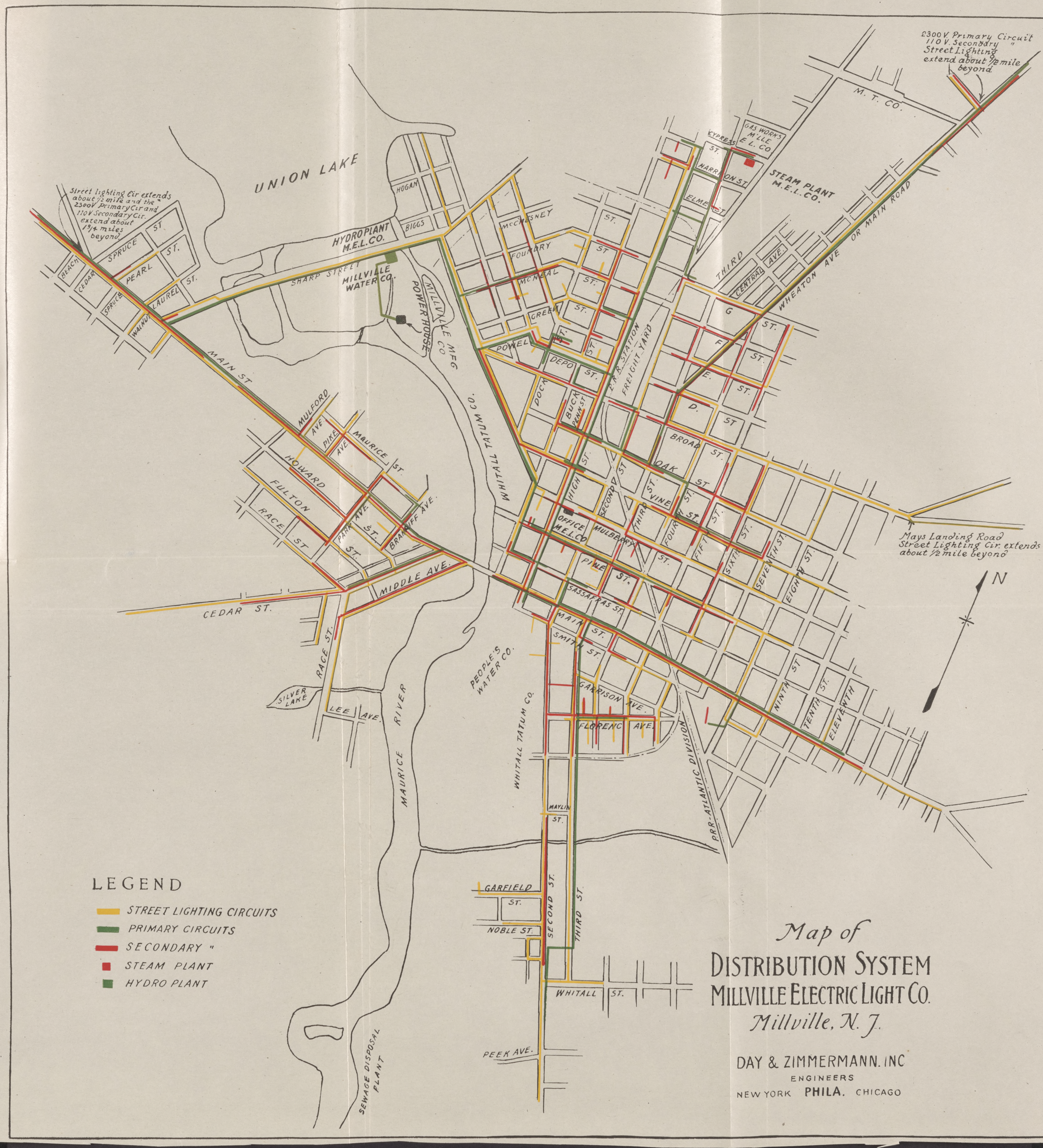
V. Earnings and Expenses

VI. Valuation

VII. Capital Requirements

VIII. Summary of Conclusions

IX. Appendix "A"—Details of Reproduction Estimates



Map of
DISTRIBUTION SYSTEM
MILLVILLE ELECTRIC LIGHT CO.
Millville, N. J.

DAY & ZIMMERMANN. INC
ENGINEERS
NEW YORK **PHILA.** CHICAGO

CORPORATE HISTORY

The Millville Electric Light Company was incorporated on December 14, 1891, under the laws of the State of New Jersey entitled "An Act Concerning Corporations approved April 7, 1875," and the several supplements thereto. The Articles of Incorporation were filed on January 28, 1892, and state that business is to be conducted in Millville, Cumberland County, New Jersey, for the purpose of "manufacturing, supplying and transmitting heat, light, power and sound by any materials and by electricity or other motive power or force, and to supply electricity for light, power heat or any other purpose or purposes to which the same may be used or applied."

Capital stock was authorized to the amount of $50,000 consisting of 500 shares at $100 each par value. No bonds have been issued nor has any increase been made in the capital stock above the original authorized issue of $50,000 which is all outstanding, with the exception of one share which has been reacquired by the Company.

Operations were begun in 1892 with a hydro electric power plant and distribution system in Millville.

The ownership of the capital stock at the present time is as follows:

Millville Manufacturing Company,	217 shares
George Wood,	3 shares
Walter Wood,	259 shares
Others,	20 shares
Total	499 shares

At the present time the Company is one of a group of four companies which are operated by one organization from the same general office. The other three companies in the group are the Cumber-

land County Gas Company, Millville Water Company and the High Pressure Construction and Supply Company.

Detailed records are kept of the time of the various members of the organization from which allocations are made to the various companies.

The High Pressure Construction and Supply Company keeps the stocks of materials and supplies except coal and meters, sells all appliances and does all construction work for the other three companies for which it makes certain charges covering the cost of labor and materials, overheads and profits.

There are no contracts or written agreements between the High Pressure Construction and Supply Company and the Electric Light Company relative to services to be performed and compensation therefor. Mr. Franklin, as manager of the Electric, Gas and Water Companies, instructs himself as Engineer for the Construction Company to perform certain work upon the completion of which formal bills are rendered.

We are of the opinion that a formal agreement should be executed between the companies setting forth the services to be performed by the High Pressure Construction and Supply Company and the basis of payment for same.

DESCRIPTION OF PROPERTY AND TERRITORY SERVED

The Millville Electric Light Company furnishes electric energy in the town of Millville, New Jersey, and the immediate vicinity. The general location and extent of the property is indicated on the map opposite this page.

Description of Property

The property consists of a hydro-electric power plant, a steam driven electric power plant, together with transmission, distribution and municipal street lighting systems. There is a connection with the power plant of the Millville Manufacturing Company where energy is purchased in cases of emergency.

The output and sales for the year 1921 are shown by the following tabulation:

OUTPUT		SALES	
Hydro Plant	533,995 KWH.	Municipal Lighting,	319,869 Kwh.
Steam Plant	657,200 KWH.	Commerical "	348,762Kwh.
Purchased	867,660 KWH.	Commercial Power	847,651 Kwh.
Total	2,058,855 KWH.	Total	1,516,232 Kwh.
NOTE: Used by the Company and unaccounted for			542,573 KWH.

Hydro-electric Plant

The hydro-electric power plant, as may be seen on the map, is located near Union Lake and adjacent to the plant of the Millville Manufacturing Company. This latter company owns certain water rights on the lake and has a headrace about 40 ft. wide and 7 ft. deep leading from the lake to its plant. It is from this headrace that the Millville Electric Light Company receives the water for its hydro-electric power plant, having purchased from the Manufacturing Company in 1892 the right to 100 HP. in the race subject to the prior right to the first

50 HP. in the race held by the Millville Water Company.

The water for the hydro-electric power plant is drawn from the headrace through a forebay, with hand operated gates, and thence through a steel flume 60 in. in diameter and 153 ft. long to the plant. There are two waterwheels rated at 90 HP. and 60 HP. operating under a working head of approximately 21 ft. The wheels are coupled together and belted to a 300 K.W., 2300 volt, alternating current generator with 14 K. W. exciter. In addition to the waterwheels the plant contains a prime mover in the form of a 50 Hp. gas engine purchased to operate with the waterwheels in driving the 300 K. W. generator. At the present time the engine is not connected.

In addition to the above described equipment the plant contains a brush arc light generator with capacity of 100 arc lights, the main switchboard and step-down transformers. Practically all the energy sold is distributed from this station at 2300 volts.

The average hourly output of the hydro-electric plant generator in 1921 was at the rate of 69 K. W. or 92 HP. on the basis of 24-hour operation throughout the entire year.

The energy generated at the steam driven power plant is received over a 6600 volt transmission line and stepped down for distribution with the exception of a relatively small amount used by several customers on the line from the steam driven plant.

The energy purchased from the Millville Manufacturing Company is received at the switchboard of that company at a low voltage and stepped up to 2300 volts for transmission to the hydro-electric plant.

Adjoining the buildings housing the equipment of the hydro-electric plant are several other brick and frame buildings owned by the Millville Electric

Light Company but used by the Millville Water Company and for the use of which no rental is paid. These buildings have been included in the appraisal.

Steam Driven Power Plant

The steam driven power plant is located in the northern part of the city about a mile from the hydro-electric plant and along the right of way of the West Jersey and Seashore Railroad adjacent to the gas production plant of the Cumberland County Gas Company.

This plant has a total rated capacity of 500 K. W. in one 6600 volt, alternating current generator, direct connected to a 750 HP., horizontal, cross-compound Corliss engine, operating condensing. The output for 1921 of 657,200 K. W. H., as hereinbefore given, may be considered low for on account of breakdowns there was no energy generated during the months, of June, September and October.

The boiler equipment consists of two handfired Babcock & Wilcox boilers of 400 HP. each, operating at 125 lbs. pressure and equipped with the "Gray System" of automatic combustion control, a steel stack 72 in. in diameter and 100 ft. high and a Webster feed water heater of 600 HP. capacity.

The building housing the power plant equipment is of concrete block construction with monolithic concrete foundations. The engine and boiler rooms are divided by a concrete block wall and there is a basement under the engine room.

As already stated, the energy generated at this station is transmitted at 3 phase, 6600 volts to the hydro-electric plant where it is stepped down by three 300 K. V. A. Westinghouse transformers to 2300 volts for distribution.

The major portion of the steam raised at this plant is sold to the Cumberland County Gas Company for use in its gas production plant nearby. In

1921 the Gas Company was billed for production costs only, all taxes, depreciation and fixed charges being borne by the Millville Electric Light Company. Since January 1, 1922, the charges have included production and overhead costs, taxes, depreciation, return on investment necessary for the service and profit.

Purchased Power

As already stated, in cases of emergency energy is purchased from the Millville Manufacturing Company. By reason of the serious breakdown in the steam driven power plant in 1921 the total amount purchased in that year was 867,660 K. W. H. or about 42 per cent. of the total sales. The energy thus purchased is measured on the switchboard of the Millville Manufacturing Company and is paid for at the rate of 3 cents per K. W. H. plus a fixed charge of $12.50 per month.

Transmission and Distribution System

The general layout of the transmission and distribution system is shown on the map opposite page 7. It consists of 55.82 miles of circuits and meters, services, etc. made up as follows:

2.05 miles of 6600 volt line between the steam driven power plant and the hydro-electric plant and extensions to T. C. Wheaton Company and W. T. Taubel Company.

0.17 miles of 2300 volt line between the hydro-electric plant and power plant of the Millville Manufacturing Company.

10.85 miles of 2 and 3 wire primary circuits at 2300 volts.

16.28 miles of 2 and 3 wire secondary circuits at 110 and 220 volts.

26.47 miles of street lighting circuits for series incandescent lights and arc lamps.

820 customers' meters.
798 services.
548 series incandescent street lights ranging from 60 to 1000 cp.
29 luminous arc lights.
795 customers.

Condition of Property

All of the above described property was in good operating condition at the time of our investigation.

Territory Served

The town of Millville has a population, according to the 1920 Census, of 14,690 persons. It is situated in Cumberland County, New Jersey, at the terminus of the Millville Branch of the West Jersey & Seashore Railroad, 40 miles southeast of Camden, N. J. It is also at the head of navigation of the Maurice River, which has been dammed to form Union Lake, a source of water power for a number of industries.

Millville is a manufacturing town with a number of small and moderate sized factories, four large glass works, and the cotton mill and bleachery of the Millville Manufacturing Company. It is connected by a street railway with Vineland, six miles distant, and Bridgeton, eleven miles distant. The three towns comprise one of the most thickly populated sections of the southern part of New Jersey.

The population of Millville has steadily increased since 1890, as the following table, based on United States Census records, indicates:

Year	Population	Increase in Population	% Increase
1890	10,000		
1900	10,580	580	5.8
1910	12,450	1,870	17.8
1920	14,690	2,240	18.0

Ordinance No. 42

An Ordinance authorizing "The Millville Electric Company" to erect poles and place wires over, through and across the streets and alleys of the City of Millville for the transmission of electricity to furnish light, heat, sound, power or any other purpose whatsoever.

SEC. 1 Be it ordained, by the City Council of the City of Millville, that permission be and hereby is granted to the "Millville Electric Company," for the term of three years from the passage of this ordinance, to place poles and wires on, over, through and across the streets and alleys of the City of Millville for the purpose of conducting electricity for heat, light, sound, power or any other purpose whatsoever.

SEC. 2 And be it ordained, that all poles erected by said company shall be of wood or iron, well painted, neat in appearance and of sufficient strength, and be kept in good repair, and all main wires of said company shall be at least twenty feet above the surface of the streets or alleys, and all lamps and wires shall be properly insulated and secured to prevent danger to persons and property.

SEC. 3 And be it ordained, that the said City of Millville shall have power to compel the said company to remove all poles from said streets and alleys at any time, and to lay the wires in underground conduits, subject to such regulations and restrictions as the city shall impose; and upon the request of the mayor, said company shall remove, temporarily, their wires when necessary to allow the passage of a building in course of removal.

SEC. 4 And be it ordained, that nothing herein contained shall be construed to grant unto "The Millville Electric Company" and its successors, any exclusive privilege or right, or to prevent the grant of similar or like privileges to other individuals or corporations.

SEC. 5 And be it ordained, that said "Millville Electric Company" shall pay to the City Treasurer all expenses connected with the passage of this ordinance, and said ordinance shall take effect on the fifteenth day of August, one thousand eight hundred and ninety-one.
Passed July 10th, 1891.

Approved July 15th, 1891.

FRANCHISES AND RATES

Franchises

Under date of July 10, 1891, the Millville City Council passed an ordinance, No. 42, authorizing "The Millville Electric Company to erect poles and place wires over, through and across the streets and alleys of the City of Millville for the transmission of electricity to furnish light, heat, sound, power or any other purposes whatsoever." The conditions of this ordinance are set forth on preceding page.

As may be seen, the ordinance was effective August 15, 1891, and was for a period of three years. It has never been renewed or extended nor has any other ordinance been passed to supersede it.

Rates

The rates charged by the Millville Electric Light Company for electrical energy and power, exclusive of street lighting rates, from January 1, 1911, to January 1, 1917, were 15c gross per K. W. H. and 12c net per K. W. H. if paid within ten days, for bills under $5.00. For bills of $5.00 and over the gross charge per K. W. H. was also 15c but the net charge was 10.5c if paid within ten days. The minimum charge was $1.00 per month. There was no charge made to the customer for the cost of the service connection from the main circuit in the street to the meter or for renewals of 16 candle power lamps. For other lamps the regular market price was charged.

The next schedule of rates was in effect for one year from January 1, 1917, to December 31, 1917. On the latter date the power rates were increased 0.5c per K. W. H. Otherwise the new schedule of rates, which was effective from January 1, 1918, to March 1, 1921, was substantially the same as the schedule effective during the year 1917. This new schedule of rates is shown in detail on the opposite

MILLVILLE ELECTRIC LIGHT COMPANY

History of Rates—January 1, 1918 to Date.

Schedule	CLASS OF BUSINESS	ENERGY CHARGE PER K. W. H.			
		March 1, 1921 to date		January 1, 1918 to March 1, 1921	
		Gross	Net	Gross	Net
A —	Residential, Office, Professional and Club Lighting				
	First 30 K. W. H. or less	19c	16c	15c	12c
	All over 30 K. W. H.	17c	14c	13c	10c
	Minimum Charge per Month	$1.10	$1.00	$1.10	$1.00
B —	Store, Mercantile and Church Lighting				
	First 100 K. W. H. or less	15c	14c	11c	10c
	101 K. W. H. to 500 K. W. H.	14½c	13½c	10½c	9½c
	All over 500 K. W. H.	14c	13c	10c	9c
	Minimum Charge	$1.10	$1.00	$1.10	$1.00
C —	Transient Lighting			15c	14c
	First 100 K. W. H. or less	20c	10c	14c	13c
	101 K. W. H. to 500 K. W. H.			13c	12c
	All over 500 K. W. H.	$2.20	$2.00	$2.20	$2.00
	Minimum Charge			8c	7c
D —	Sign Lighting	12c	10c	7c	6c
	First 100 K. W. H. or less	$1.10	$1.00	$1.10	$1.00
	All over 100 K. W. H.				
	Minimum Charge				
E —	Industrial lighting: When industrial lighting is used in connection with electric power under Schedule AP the lighting rate will be 1 1/2 times the average power rate for the same month.				
AP —	Power Rates:				
	First 250 K. W. H.	10c	10c	7.5c	7.5c
	Next 250 "	9c	9c	6.5c	6.5c
	" 1,000 "	8c	8c	5.5c	5.5c
	" 1,500 "	7c	7c	4.5c	4.5c
	" 2,000 "	6.0c	6.0c	3.5c	3.5c
	" 5,000 "	5.5c	5.5c	2.5c	2.5c
	" 1,000 "			2.4c	2.4c
	" 1,000 "			2.3c	2.3c
	" 1,000 "	5.0c	5.0c	2.2c	2.2c
	" 1,000 "			2.1c	2.1c
	" 1,000 "			2.0c	2.0c
	" 5,000 "	4.5c	4.5c	1.5c	1.5c
	All over 20,000 "	5.5c	5.5c	2.5c	2.5c
	Minimum Charge	$1.00 per month per H. P. of connected load for 50 HP. or less .50 per month per H. P. of connected load for all over 50 H. P. provided that that amount of current is not registered on the meter.			

page, together with the present schedule which became effective March 1, 1921.

The average power rate per K. W. H. for the first 20,000 K. W. H. in the present schedule is 5.5125c and in the previous schedule effective from January 1, 1918, to March 1, 1921, it was 2.6875c. It is seen that this rate is in excess of the power rate for the second 20,000 K. W. H. by .0125c in the present schedule and by .1875c in the previous schedule.

The street lighting rates in the past have been the subject of a formal contract with the city. The rates effective since January 1, 1911, are shown in the table opposite the following page, together with the period in which each schedule was effective. The present schedule shows the rates charged the town of Millville by the electric light company, but since they became effective on February 1, 1921, the town has paid the electric light company an amount based on the previous schedule. The last contract between the Company and the city was based on the second schedule of rates shown in the table.

Electrical current has been purchased by the electric light company from the Millville Manufacturing Company since December, 1915. A fixed charge of $12.50 a month has been charged the electric light company since that date. The following table gives the cost per K. W. H. to the electric light company on the switchboard at the power plant of the Millville Manufacturing Company since they began to purchase same:

December 1915 to May 1916	2 1-4c
May 1916 to August 1916	2c
August 1916 to June 1917	1 1-2c
June 1917 to August 1917	1 3-4c
August 1917 to February 1920	2c
February 1920 to October 1920	2 1-2c
October 1920 to date	3c

There has been no written contract between the Company and the Millville Manufacturing Company.

After a careful study of the present rate structure, we conclude that there is no discrimination between classes of customers. Considered as a whole and from the point of view of net earnings, the rates are obviously too low to net the Company a fair return on the value of its property under present operating conditions. On the other hand, we do not believe that they can be increased without making the cost of the service too high from the point of view of increasing the business, especially in view of the competition of the Cumberland County Gas Company.

MILLVILLE ELECTRIC LIGHT COMPANY

History of Street Lighting Rates
January 1, 1911 to date

TYPE OF LIGHT	RATE PER YEAR PER LIGHT Jan. 1, 1911 to Feb. 1, 1916	Feb. 1, 1916 to Feb. 1, 1921	Feb. 1, 1921 to Jan. 1, 1922
Arcs			
D. C. series enclosed			
1200 Candle Power	$69.00		
Series Luminous			
1600 Candle Power		$55.00	$80.00
Series Incandescent			
50 Candle Power	$34.55		
60 " "		15.50	
100 " "		18.00	20.00
150 " "			28.00
250 " "		27.00	
280 " "			40.00
400 " "		38.00	
600 " "		48.00	60.00
1000 " "			75.00

BALANCE SHEET

Opposite this page is a balance sheet of the Millville Electric Light Company as of December 31, 1921. A study of this statement immediately suggests the desirability of a financial program leading to a readjustment of liabilities. As may be seen from the balance sheet capital assets amount to $347,132.62 compared to capital liabilities of $53,000.00 while current assets are only $33,993.27 compared with current liabilities of $308,217.81. Other assets amount to $21.09 while other liabilities are $27,725.60. Surplus and reserves are represented by a net deficit of $8,696.23.

Any financial program must of course take into account the earning power of the company especially since operations have resulted in a deficit each year as hereinafter shown under the headings of Earnings and Expenses.

About 90 per cent. of the total curent liabilities ($275,399.52) consist of bills payable to Walter Wood. At the present time, Mr. Wood controls the company through ownership of 259 shares of capital stock. Of the total other liabilities $26,843.99 is due the High Pressure Construction and Supply Company which company is also controlled by Mr. Wood.

Accrued amortization of capital, $80,281.55, represents the amount charged to depreciation to date. The practice of the company, in accordance with the suggestion of the Board of Public Utility Commissioners, is to credit this account each year with a certain percentage of the plant account value as of the beginning of the year (7 1-2 per cent since 1919) and to deduct therefrom at the end of the year all maintenance expenditures. While the amount set aside each year under this plan is contingent upon the amount expended for maintenance, we believe

MILLVILLE ELECTRIC LIGHT COMPANY

Balance Sheet

As at December 31, 1921

ASSETS

Capital Assets		
Fixed Capital prior to January 1, 1913		80,921.70
Fixed Capital subsequent to December 31, 1912		266,210.92
Total Capital Assets		347,132.62
Current Assets		
Cash in Bank	416.08	
Cashier's Account (Petty Cash)	100.00	516.08
Investments—Liberty Bonds		1,500.00
Accounts Receivable		
Electric	21,788.42	
Sundry	29.30	21,797.72
Cumberland County Gas Company		7,422.20
Interests and Dividends Receivable		50.44
Materials and Supplies		2,707.83
Total Current Assets		33,993.27
Other Assets		
Millville Water Company		2.25
Advance Insurance		18.84
Total Other Assets		21.09
TOTAL ASSETS		361,146.98

LIABILITIES

Capital Liabilities		
Capital Stock	50,000.00	
less stock reacquired	100.00	49,900.00
First Mortgage on Real Estate		4,000.00
Total Capital Liabilities		53,900.00
Current Liabilities		
Bills Payable (Walter Wood)		275,399.52
Accounts Payable		
Walter Wood	1,050.00	
R. D. Wood & Co.	920.00	
Stuart Wood Estate	30.00	
Others	25,073.02	27,073.02
Consumers Deposits		5,567.41
Accrued Interest		19.33
Accrued Water Rent		133.33
Total Current Liabilities		308,817.61
Other Liabilities		
High Pressure Construction and Supply Company		26,843.99
Suspense Revenue		881.61
Total Other Liabilities		27,725.60
Surplus and Reserves		
Accrued Amortization of Capital		80,261.58
Casualty and Insurance Reserve		5,532.00
Surplus		94,539.78
Total Surplus and Reserves		188,696.23
TOTAL LIABILITIES		381,146.98

that the total thus accumulated to date is fair and reasonable after careful consideration of the present condition of the property as a whole.

The following comments explain, insofar as it is possible to do so, each item on the balance sheet.

Fixed Capital prior to January 1, 1913 **$80,921.70**

This represents the costs of various items of plant and investment acquired prior to January 1, 1913 which are still in use.

Fixed Capital subsequent to December 31, 1912 **$266,210.92**

This represents investment in various items of plant and property acquired since December 31, 1912, and may be detailed as follows:

Land Devoted to Electric Operation	$6,100.62
General Equipment	1,124.44
Dams, Canals and Pipe Lines	490.17
Power Plant Buildings	14,328.13
Furnaces, Boilers and Accessories	51,266.22
Steam Engines	24,960.49
Electric Generators	13,353.67
Accessory Electrical Power Equipment	21,794.55
Miscellaneous Power Plant Equipment	2,149.05
Poles and Fixtures	29,034.90
Distribution System	45,448.17
Line Transformers and Devices	15,860.41
Electric Services	7,118.55
Electric Meters	10,178.28
Electric Meter Installation	1,275.43
Municipal Street Lighting System	20,919.87
Electric Tools and Implements	213.75
Electrical Laboratory Equipment	336.44
Organization	257.78
	$266,210.92

Cash $515.08

Consists of cash in bank $415.08
and petty funds in the hands of the
cashier 100.00

$515.08

Investments—Liberty Bonds $1,500.00

Consists of 4 per cent. bonds of the Third issue.

Accounts Receivable—Electric $21,768.42

Represents the amount due from the sale of electric current and is equivalent to nearly two months' billing. This would indicate either a laxity in collections or a large proportion of accounts which are practically uncollectible. Contains certain amounts due from City of Millville in connection with increases in rates which the City has refused to acknowledge.

Accounts Receivable—Sundry $29.30

Interest and Dividends Receivable $50.44

Represents accrued interest receivable on Liberty Bonds.

Materials and Supplies $2,707.83

Consists of various materials on hand as of December 31, 1921, priced as cost as per inventory furnished to us by the Company.

Cumberland County Gas Company $7,422.20

Represents the amount due from Cumberland County Gas Company for steam supplied. This is a current balance and will be settled in January.

Millville Water Company $2.25

Represents the amount due from Millville Water Company.

Advance Insurance $18.84

Represents fire insurance premiums paid in advance.

Capital Stock $49,900.00

Consists of 499 shares with a par value of $100 each. The original issue was $50,000 but one share was reacquired and is held in the treasury.

First Mortgage on Real Estate $4,000.00

Represents mortgages given in connection with the purchase of two plots of ground. The first was purchased May 24, 1916, and the second June 8, 1920. The price paid in each case was $2,500 with a cash payment of $500 and notes for the balance. These notes are due.

Bills Payable (Walter Wood) $275,399.52

Consists of various notes issued by the Company to Walter Wood for cash advanced by him to finance the building of the new steam plant, etc.

Accounts Payable $2,000.00

Accounts Payable—Others $25,078.02

Represents amounts due on account of current operations including purchase of materials and supplies.

Consumers' Deposits $5,587.41

Consists of amounts deposited by consumers to guarantee payment of bills..

Accrued Interest $19.33

Represents interest accrued but not yet due on various notes payable.

Accrued Water Rent $135.33

Represents amount accrued for payment to Millville Water Company for condensing water used in steam plant during December, 1921.

High Pressure Construction and Supply Company $26,843.99

Represents amount due the High Pressure Construction and Supply Company (an affiliated company) for materials furnished, labor, overhead and a percentage of profit on construction and maintenance work done for Millville Electric Light Company.

Suspense Revenue $881.61

Represents revenue from accounts receivable due from the City of Millville. This is an accumulation for November and December, 1921.

Accrued Amortization of Capital $80,281.55

Represents amount set aside for accrued depreciation at the rate of 10 per cent. annually on the plant account at the beginning of the year. In 1920 this rate was decreased to 7 1-2 per cent. a year. Against the annual credit to this account are charged all repairs and maintenance for the year. These repairs since 1911 have amounted to about $75,500.

Casualty and Insurance Reserve **$5,562.00**

Represents amount accrued as fire insurance.

Surplus **$94,539.78**

Represents the net result of operation as indicated by the earnings statement. The balance before adjustments has been a loss every year since 1911 as indicated below:

Balance—January 1, 1911	28,378.03
Operation—1911	3,950.04
1912	5,700.41
1913	8,363.92
1914	5,994.60
1915	1,076.44
1916	135.13
1917	7,488.66
1918	9,305.69
1919	6,822.35
1920	64,746.44
1921	11,487.01
Balance—December 31, 1921	94,539.78

MILLVILLE ELECTRIC LIGHT COMPANY

Operating Statistics

Average Rate Received per	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921
Municipal Street Light—Arc	209,100	209,100	212,753	218,544	218,880	81,288	37,120	41,373	41,373	41,373	43,289
Municipal Street Light—Incand.			700	700	1,167	120,382	220,009	241,460	272,940	269,985	276,880
Commercial Metered Light	48,661	61,817	69,532	84,708	85,157	105,406	168,013	160,132	213,677	321,982	348,762
Commercial Metered Power	7,352	5,930	7,686	6,948	23,458	337,219	778,819	678,507	618,667		647,651
Commercial Flat Rate Light	9,012	5,192	5,979	3,341	2,333	3,508	589	2	9		
Total K. W. H. Sold.	274,125	282,039	296,650	314,241	330,995	647,803	1,204,550	1,121,474	1,146,666	1,949,480	1,516,282
K. W. H. Sold											
K. W. H. Sold											
Municipal Street Light—Incand.	.0476	.0480	.0398	.0464	.0457	.0397	.0430	.0384	.0386	.0386	.0492
Municipal Street Light—Arc			.0493	.0493	.0692	.0579	.0431	.0356	.0359	.0366	.0499
Commercial Metered Light	.1080	.1182	.1059	.1042	.1085	.1146	.0905	.0988	.0982	.0987	.1367
Commercial Metered Power	.0824	.0727	.0817	.0818	.0529	.0248	.0249	.0317	.0330	.0286	.0556
Commercial Flat Rate Light	.1143	.1155	.1024	.1153	.1292	.0531	.1752				
K. W. H. Sold											
Average Rate Received per total	.0614	.0653	.0519	.0640	.0632	.0476	.0381	.0433	.0460	.0528	.0730
Number of Customers											
Commercial Lighting						183	249	282	372	566	783
Power						5	7	13	21	20	24
Total Number of Customers	115	131	147	150	168	188	256	295	393	586	807
K. W. H. Generated											
Hydro							361,040	386,893	521,943	515,463	533,995
Steam										1,126,730	657,200
Purchased							1,005,431	810,669	790,910	748,600	867,660
Total K. W. H. Generated	311,000	320,000	337,000	357,000	376,000	736,000	1,366,471	1,197,562	1,312,853	2,385,793	2,058,855
Average Cost per total K. W. H. Generated	.0347	.0474	.0599	.0469	.0424	.0294	.0272	.0319	.0312	.0583	.0695

EARNINGS AND EXPENSES

Opposite this page is shown a comparative statement of the earnings and expenses of the company for eleven years from 1911 to 1921 inclusive. As may be seen there was little change in both gross operating revenue and total operating expenses during the five year period from 1911 to 1915 inclusive, the former averaging yearly $18,702.89 and the latter $15,769.16. Since 1915 the revenue and expenses have steadily increased due to increased business only in 1915 and 1916 and to both increased rates and increased business from 1917 to 1921 inclusive.

The following table shows the percentage increase of gross operating revenue and of total operating expenses for each year from 1916 to 1921 inclusive over the average for the five year period 1911 to 1915 inclusive:

	Average	Percentage Increase					
	1911–1915	1916	1917	1918	1919	1920	1921
Gross Operating Revenue	18,702.89	65.0	144.6	161.0	182.1	451.0	491.0
Total Operating Expenses	15,769.16	37.5	134.5	142.0	150.0	783.0	691.0

It is seen that the percentage increase for both revenue and expenses is fairly constant until 1920 when the revenue largely increased as a result of increased business compared with former years.

The expenses had a greater proportionate increase than revenue in 1920, resulting mainly from the high prices paid for coal during that year. The steam plant commenced operation in February, 1920, and the average price paid during eleven months of that year per gross ton of bituminous coal delivered at the steam plant was $10.33 which was 53.5 per cent. greater than the average price of $6.86 paid in 1921. For this reason the expenses were lower in 1921 than in 1920.

The revenue increase in 1921 was due to increased rates only. The new rates became effective in March and although the number of customers increased the actual K. W. H. sold decreased, on account of the industrial depression.

The operating statistics, from 1911 to 1921 inclusive, showing the K. W. H. sold and generated, the average rate received per K. W. H. sold, the average cost per K. W. H. generated and the number of customers, are presented at the end of this section of the report.

The non-operating income for the years 1911 to 1920 inclusive averaged approximately $1792, but in 1921 increased to approximately fifteen times the average for 1911 to 1920 or $27,781.44. This increase is accounted for by the sale of a large amount of steam to the Cumberland County Gas Company, in fact $27,655 of the total amount of non-operating income in 1921 represents revenue from this source.

In this connection attention is called to the fact that the charges for steam to the gas company covers production costs only and does not include taxes, depreciation or fixed charges.

The allowance for amortization of capital in the period 1911 to 1921 has varied from approximately $400 to $13,135. In the period from 1911 to 1919 inclusive the yearly charge to this account was 10 per cent. of the plant account at the beginning of each year minus the cost of repairs made during the year. Since 1919 the yearly charge has been reduced to 7.5 per cent. of the plant account at the beginning of each year minus the cost of repairs made during the year. In 1920 the allowance reached a maximum by reason of the large increase in the capital account as of the beginning of 1920.

The new steam plant and additions to the distribution system constructed in the period 1916 to 1919 inclusive were carried in an account "Con-

struction Work in Progress'' until the beginning of 1920, when the total cost of this work was added to the capital account.

The difference between the actual yearly electric operating revenue since 1892 and the sum of the actual yearly operating expenses plus taxes and an allowance for depreciation and 7 per cent. return on the capital account as of the beginning of each year is hereinafter shown in a tabulation under the heading of Going Concern Value.

The difference shows the revenue to be less than the sum of the expenses and a 7 per cent. return on the capital account, for every year since 1906, reaching a maximum in 1920.

It is clear that the operations of this property in the past have not been profitable, the balance after depreciation being a deficit in every year since 1910.

Prior to 1916 all energy sold was generated in the hydro-electric plant. In December, 1915, the Company began purchasing energy from the Millville Manufacturing Company. The rates paid for such energy have varied from 1 1-2c to 3c per K. W. H. plus a fixed charge of $12.50 per month.

Up to 1920 the deficits after depreciation did not reach $10,000 in any one year. We have not made an analysis of operating prior to 1920 and therefore are not in a position to state the reasons for the yearly losses.

In February, 1920, the present steam power plant was placed in operation and the production expenses for the year increased $102,058 over 1919. In this connection it should be noted that the total production expense included the cost of producing the steam sold to the Cumberland County Gas Company. The total coal consumption (including 676 tons of coke) for 1920 was 6,454 gross tons, of this amount 3,617 gross tons have been allocated by the management to the production of electrical energy

and 2,837 gross tons to the production of steam for the gas company. The weighted average price paid for coal during 1920 was approximately $11.00 per gross ton at the plant and on this basis the total cost of coal used for the generation of steam for the gas company was $31,207. The total revenue collected from the gas company in 1920 was $21,962 or approximately $10,000 less than the actual cost of coal alone. If an appropriate portion of boiler room labor and repairs, depreciation, taxes and fixed charges are added, the total loss on this business was approximately $19,000.

As explained by the management, their charges to the gas company in 1920 for steam were based on operating costs in the gas company's own steam plant during 1918 and 1919.

In 1921 the gas company was billed production costs only and no charges were made to cover taxes, depreciation or return on the investment, the total of which we estimate at approximately $5,000 per annum.

As hereinbefore mentioned certain land and buidings of this company at the hydro plant are used by the Millville Water Company but no rental is paid. We estimate that $1,000 per annum would be a reasonable charge for the use of this property.

The present schedule of rates was effective March 1, 1921. Our estimates indicate that if the new rates had been effective January 1, 1921, the total revenue for the year would have been increased by approximately $5,000.

If the 1921 operating statement is adjusted to give effect to the figures developed in the three preceeding paragraphs it is found the balance to surplus which was a deficit of $11,487.01 is reduced to a deficit of only $500 more or less.

VALUATION

We were instructed to make an inventory and appraisal of the property to be submitted to the Board of Public Utility Commissioners of the State of New Jersey in connection with the Board's investigation of the rates now in effect.

Inventory

Relative to the inventory Mr. S. J. Franklin, Manager of the Millville Electric Light Company received, under date of December 21, 1921, a letter signed by Philander Betts, Chief Inspector, Bureau of Utilities, Board of Public Utility Commissioners, in part as follows:

> "It is our recollection that at the time of your last application for an issue of securities, an appraisal was submitted by Day & Zimmermann, Inc. which was examined and checked in detail by the Board's appraisal department."
>
> "The value of the additions made to your plant subsequent to the date of Day & Zimmermann's previous appraisal should not be a very contentious matter and, if this previous appraisal is to be used, the logical thing to do would be to add on the cost of additions subsequent to that date. An analysis of these additional expenditures might be made for you by Day & Zimmermann, Inc. and if submitted in sufficient detail to be checked by the Engineers of the Board and by the Engineers for the municipality, it is probable that all of our requirements will be met with respect to the valuation."

Acting upon the suggestion contained in Mr. Betts' letter we have brought our previous inventory, as of January 1, 1920, up to January 1, 1922.

In doing this the general method of procedure was to deduct all retirements and add all additions determined by an inspection of the property. The distribution system was an exception to the general method. In this connection the Company recently made a complete survey of the system and listed in detail all the material in place as of January 1, 1922. This data was used by us as a basis for our inventory of the distribution system. The various circuits were laid out on a map of Millville with the sizes of wire indicated and this map was spot checked in the field.

The scaling of the map, together with the field check, showed substantially an agreement with the inventory based on the actual field count made by the Company. This field count also checked with our inventory made in January, 1920, after adding to such inventory the amount of wire placed in service since that date.

We have included in the inventory, under the heading of "Power Plant Buildings" certain land and buildings owned by the Millville Electric Light Company but used by the Millville Water Company.

Price Basis

In deciding upon the proper basis of prices to be applied to the various items of the inventory we have given careful consideration to the practice of the Board of Public Utility Commissioners in other cases of this nature and to certain decisions of the Supreme Court of the State of New Jersey.

As we understand it, the practice of the Board of Public Utility Commissioners in finding fair value for rate making purposes has been to use, as a base, the original cost of the property wherever it could be ascertained and where such cost could not be obtained to use reproduction cost estimates upon such price bases that would as nearly as possible reflect original cost.

The New Jersey Supreme Court in Elizabethtown Gas Light Company to Board of Public Utility Commissioners 111 A. R. 729 (opinion by Swayze, J.) stated in part as follows:

> "The companies claim that there was an undervaluation of their property, first; because the Commissioners adopted as the standard of value of the average price prevailing for five years preceding January 1, 1916; second, because they disregarded the only evidence as to going concern value, and adopted an arbitrary sum not sustained by an evidence at all, and, third, because they arbitrarily omitted what is called the overhead valuation on land owned by the companies, being, as I understand it, the cost of acquiring and assembling the land employed by the companies for the manufacture of gas———
>
> "I think it entirely clear that the failure to allow for prices at the time to which the rates apply, July 1, 1919, was in error—
>
> "The companies also claim that they should be allowed for overhead expenses $19,000 for securing the land and getting it together. I think they should be allowed the expenses to which they can prove that they have been put for this service, provided they are not unreasonable————"

In view of the foregoing we have made two estimates, one based on costs of labor and materials as of January, 1922, and the other based on costs of labor and materials obtaining over the period in which the property was constructed. In making the latter estimate unit prices were not applied to the various items making up the inventory but price trend factors were used. From the yearly additions to plant we determined what property was installed

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prior to 1914 and what property was installed since 1914 or during the period of high prices. Proper price trend factors were then applied to the 1922 figures giving an estimated cost of reproduction new based on average prices for materials and labor for the period over which the property was actually constructed.

To the cost of reproduction new estimated as described above we have added certain indirect or overhead costs as follows:

1. Preliminary and Organization Costs 2 p. c.

This item includes any costs incurred in connection with preliminary studies such as surveys, designs, preliminary outline, prospectuses, soliciting subscriptions for stock, negotiations with governmental bodies, and also any legal and incorporation costs, etc.

2. Administration Costs 2 p. c.

This item includes all expenses in connection with the administration of the affairs of the Company during the construction period and up until the various parts of the property become operative. It includes legal expense, salaries of officers and clerks, rent, repair, heat and lights for general office, etc.

3. Engineering and Superintendence 6 p. c.

This item of cost includes all expenditures for services of engineers, draftsmen and superintendents employed on construction work and all expenses incident to such work, such as obtaining the necessary data or measurements, designs, specifications and the inspection, superintendence, hiring of labor, etc. during the construction of the property.

4. Taxes and Insurance 1 1-2 p. c.

This item includes both state and federal taxes on the taxable portion of the property, fire insur-

ance, liability insurance for the public in general and for the employees based on the labor payroll. This allowance therefore depends upon the length of the construction period.

5. Loss of Interest during Construction 3½ p. c.

This item includes the interest accrued upon all moneys, expended in connection with the construction and equipment of the property up until the time it is placed in operation.

In our estimates we have taken 7 per cent. as a fair and reasonable rate. From our study of the property, its accessibility to railroads and general advantageous location in the town we believe it could be built in one year. On this basis, therefore, the loss of interest would equal 3 1-2 per cent. of the total cost of all items of property plus the foregoing overheads or indirect costs.

Working Capital—Materials and Supplies

The materials and supplies as inventoried on January 1, 1922, are appraised at $2,708. This amount includes only the coal on hand as of that date and sundry scrap material. The remainder of the materials and supplies generally needed by an electric light company, with the exception of meters in stock which are carried in the "meter account," are handled by the High Pressure Construction and Supply Company and contained in their stores until needed by the electric light company. The High Pressure Construction & Supply Company does most of the construction work and some of the repair work for the electric light company. It also does a retail business in selling electrical fixtures and appliances.

Cash Working Capital

The allowance made for cash working capital represents approximately two months average oper-

ating expenses on the basis of operating results during the year 1921 or $20,780.

The total working capital thus obtained is $23,488.

Going Concern Value

Going concern value or the element of value which a property has by reason of its completely assembled plant and established business is in any case a question of sound business judgment and not a matter of formula. The New Jersey Supreme Court in Elizabethtown Gas Light Company vs. Board of Public Utility Commissioners, opinion by Swayze, J. 111 A. R. 729 said in part as follows:

> "I am inclined to think that the amount allowed by the Public Utility Commission for the value of the plant as a going concern may suffice, but I do not find that there was any evidence in the case to justify the figure, and under Section 38 as amended (P. L. 1918 p. 304) the order may be set aside where it clearly appears that there was no evidence before the board to support, reasonably, the same. This make it necessary that there should be evidence to justify the finding, and that I do not find. It is, of course, a very difficult matter to determine the value of a going concern of a business property, and I see nothing to require me to decide now that the amount claimed by the companies for this value is conclusively established by the evidence."

The Court while pointing out the necessity for supporting evidence in connection with Going Concern Value did not define the nature of such evidence. We believe that among the elements to be considered are possible losses in establishing the business, adequacy of the service, prospects of the business.

MILLVILLE ELECTRIC LIGHT COMPANY

Summary of Operations 1891 to 1922.

	YEAR	(1) Plant Account at Beginning of Each Year	(2) Additions to Plant Account During Each Year	* (3) 7% Return on Investment	(4) Operating Expenses Incl. Taxes & Allowance for Depreciation	(5) Allowance for Depreciation Included in Column 4	(6) Total — Sum of Columns (3) & (4)	(7) Operating Revenue	(8) Difference Columns (6) & (7)
1891	Jan. 1, '91 to Dec. 31, '91 (12 months)								
2	'92 '92	$ 60,797		$ 4,266	$ 4,410		$ 8,666	$ 7,104	$ 1,562
3	'93 '93	60,797	$ 316	4,256	4,490		8,746	9,361	585
4	'94 Jan. 31, '95 (13 months)	61,113	450	4,278	7,005	$ 1,500	11,283	10,849	434
5	Feb. 1, '95 '96	61,563	1,157	4,309	6,315	1,500	10,624	9,444	1,180
6	'96 '97	62,720	642	4,390	4,389	1,500	8,779	4,287	4,492
7	'97 '98	62,078		4,345	6,797	1,500	11,143	8,946	2,196
8	'98 '99	62,078		4,345	7,627	1,500	11,972	9,356	2,616
9	'99 '00	62,078		4,345	5,093	1,500	9,438	9,728	290
1900	'00 '01	62,078		4,345	7,015	1,500	11,360	10,359	1,001
1	'01 '02	62,078		4,345	2,814		7,159	10,967	3,808
2	'02 '03	62,078		4,345	6,192	1,500	10,537	10,816	279
3	'03 '04	62,078	254	4,345	6,101	1,500	10,446	10,759	313
4	'04 '05	62,332	1,783	4,363	6,151	1,500	10,514	10,517	3
5	'05 '06	64,115	632	4,488	6,651	1,500	11,139	11,716	577
6	'06 '07	64,747	9,429	4,532	9,940	1,500	14,472	12,404	2,068
7	'07 '08	74,176	2,057	5,192	11,124	1,500	16,316	12,887	3,428
8	'08 '09	76,233	1,582	5,336	11,598	1,500	16,934	13,817	3,117
9	'09 '10	77,815	6,204	5,447	12,205	1,500	17,652	14,480	3,232
1910	'10 Dec. 31, '10 (11 months)	84,019	2,085	5,881	12,277	1,500	18,158	14,275	3,883
1	Jan. 1, '11 Dec. 31, '10 (12 months)	86,044	3,867	6,023	19,453	7,204	25,476	16,855	8,621
2	'12 '12	89,611	3,297	6,173	24,067	7,492	30,240	18,425	11,815
3	'13 '13	92,908	1,163	6,504	25,800	4,106	32,304	17,190	15,114
4	'14 '14	94,071	2,511	6,586	28,863	7,678	32,448	20,117	12,331
5	'15 '15	96,582	4,823	6,761	22,163	4,754	28,924	20,927	7,997
6	'16 '16	101,405	5,529	7,098	31,806	8,372	38,904	30,840	8,064
7	'17 '17	106,934	5,140	7,465	47,294	7,835	34,759	45,823	8,936
8	'18 '18	112,074	4,351	7,845	50,494	7,922	38,339	48,650	9,689
9	'19 '19	116,425	3,333	8,150	50,408	6,691	58,558	52,791	5,767
1920	'20 '20	119,758	191,892	8,383	105,060	13,134	163,443	**102,934	60,509
1	'21 '21	311,650	35,483	21,815	131,439	400	153,284	**138,449	14,805
2	'22	347,133							
								Net Operating Results to Jan. 1, 1922	188,003

(*) Return on Investment—7% of Plant Account as of the beginning of each year.
(**) Includes sale of steam to Cumberland County Gas Company.
NOTE: Plant Account at the beginning of the year includes only such property as was in operation

As evidence of the losses sustained in developing the business we have prepared a statement given opposite this page, showing the results of operation from 1895 to 1922 based upon a 7 per cent. return on the investment and actual operating expenses, depreciation allowances and gross revenue.

A study of the tabulation clearly shows that the past operations of the Millville Electric Light Company have not been profitable and that the net results from 1892 to 1922 represent a total loss of about $188,000. We do not contend that this sum represents the Going Concern Value of the property, especially since the greatest losses have occurred since 1917 or after twenty-five years of operation. The tabulation does show that there were early losses which have never been recouped.

Insofar as we were able to determine, the system is entirely adequate to meet the demands made upon it. The arrangement for the purchase of power from the Millville Manufacturing Company insures continuous service to the customers and although losses between switchboard and customers' meters are comparatively high, the property in general is in good physical condition.

The future of the business, as we view it, is good although the acquisition of customers up to 1918 was a slow process due principally to competition of the Cumberland County Gas Company. The City of Millville was served with gas for heating and lighting prior to the existence of the Electric Light Company and the problem has been to persuade the people to use electricity. This has not been possible on a wholesale basis as is evidenced by the fact that there are only 800 customers in a population of approximately 15,000. As shown on the map opposite page the City is well covered with primary and secondary lines and it is possible to serve a great

many more customers with the existing distribution system than are being served at the present time.

Operating expenses during the past two years have been out of proportion to the business done, accounted for in 1920 by high coal costs and, in 1921, to extraordinary repairs necessary in the steam driven power plant. It is expected that operating expenses will be greatly reduced in 1922.

We are of the opinion that the business has been sufficiently developed to warrant the installation of a larger and more economical generating unit in the steam driven power plant and that when this is done the Company will be in a more favorable position with respect to net earnings.

After giving careful consideration to the various aspects of the business, we conclude that $50,000 is a fair and reasonable allowance for Going Concern Value.

Summary of Reproduction Estimate

The total cost of reproduction new determined as outlined above and including Going Concern Value is as follows:

Item	Average Prices as of January 1922	Average Prices as of the Period in which property was constructed
Physical Property	$346,649	$321,578
Overhead Costs	53,391	49,533
Working Capital	23,488	23,488
Going Concern Value	50,000	50,000
Total	$473,528	$444,599

The details of the reproduction estimates are given in Appendix A.

Depreciation

The amount of accrued depreciation for the various items of property in the inventory has been estimated after a careful consideration of the present condition and age of the separate units.

MILLVILLE ELECTRIC LIGHT COMPANY

Comparison of Fixed Capital as of December 31, 1921 With Reproduction Estimates

	Fixed Capital	Fixed Capital Less Accrued Amortization of Capital as of Dec. 31, 1921	Reproduction Cost—New		Reproduction Cost—New Less Accrued Depreciation	
			Average prices during period in which property was constructed	Prices as of Jan. 1, 1922	Average prices during period in which property was constructed	Prices as of Jan. 1, 1922
Fixed Capital prior to Jan. 1, 1913 for which no details are available	$ 89,921.70					
Fixed Capital subsequent to Dec. 31, 1912.						
Land devoted to electric operations	6,100.62		$ 26,000	$ 26,000	$ 26,000	$ 26,000
General equipment	1,124.44		1,069	1,069	625	625
Dams, canals and pipe lines	490.17		5,891	7,354	4,235	5,312
Power plant buildings	14,328.13		19,697	29,810	15,512	23,005
Furnaces, boilers and accessories	51,266.22		60,275	55,929	47,724	44,142
Steam Engines	24,960.49		39,456	38,649	31,297	30,392
Turbines and water wheels			2,160	3,346	1,080	1,673
Gas Engines						
Electric generators	13,353.67		24,737	27,017	16,305	19,430
Accessory electric power equipment	21,794.55		18,392	25,122	15,641	21,602
Miscellaneous power plant equipment	2,149.05		3,431	4,963	2,470	3,544
Poles and fixtures	29,034.90		31,312	48,298	26,615	41,053
Distribution system	45,448.17		31,432	23,491	28,289	21,142
Line transformers and devices	15,860.41		14,400	16,889	12,250	14,356
Electric services	7,118.55		8,880	5,725	8,000	5,153
Electric meters	10,178.28		7,786	9,134	6,636	7,846
Electric meter installation	1,275.43		797	648	678	551
Municipal street lighting system	20,919.87		25,302	22,640	22,113	19,550
Electric tools and implements	213.75		225	225	191	191
Electric laboratory equipment	336.44		336	336	286	286
Organization	257.78					
Totals	$347,132.62	$266,871.04	$321,578	$346,649	$265,947	$285,853
Indirect or Overhead Costs			49,533	53,391	40,965	44,028
Totals	$347,132.62	$266,871.04	$371,111	$400,040	$306,912	$329,881
Working Capital	23,488.00	23,488.00	23,488	23,488	23,488	23,488
Going Concern Value	50,000.00	50,000.00	50,000	50,000	50,000	50,000
Grand Totals	$420,620.62	$340,359.04	$444,599	$473,528	$380,400	$403,369

NOTE: Figures shown for various accounts under Reproduction Estimates include property installed prior to January 1, 1913 and now in existence.

Although the Company was incorporated in 1891 and began serving the public with electric energy in 1892, the greater part of the property has been constructed since 1910. The steam plant was entirely constructed in the period between 1916 and 1921, in which time the distribution system was almost entirely rebuilt.

Our studies show that the accrued depreciation as a whole is approximately 17 per cent. of the cost new, based on average prices as of January 1, 1922, and as of the period over which the property was constructed, or 1892 to 1921 inclusive.

Comparison of Reproduction Estimates with Plant Account as Shown by the Books of the Company

Opposite this page is a tabulation giving a comparison between the fixed capital as shown by the books of the Company and the reproduction estimates, with and without deductions for accrued depreciation. Direct comparison by classes of property is not possible for the reason that there are no details for fixed capital installed prior to January 1, 1913.

A comparison of totals, however, including Indirect or Overhead Costs shows that the total fixed capital according to the books is approximately $24,000 less than the estimated cost of reproduction new based on average prices during the period in which the property was built. This difference is undoubtedly due in part to the absence of complete overhead charges in the plant account and in part to not using weighted average prices in the reproduction estimate for the property installed prior to 1913.

The estimates, based on average prices as of January, 1922, are higher than the Fixed Capital Account and the estimates based on average prices during the period in which the property was built on account of the difference in price levels.

Conclusions as to Valuation

After careful consideration of all the elements involved including the Fixed Capital Account, Reproduction Estimates and the decision of the New Jersey Supreme Court hereinbefore referred to, we are of the opinion that the fair value of the property of the Millville Electric Light Company is in excess of $400,000, bearing in mind that the Board of Public Utility Commissioners alone has the power to fix such fair value.

CAPITAL REQUIREMENTS

The capital requirements of the Company are considered from the standpoint of the immediate needs within the year 1922 for the normal expansion of the system and contemplated changes in the interests of economy.

The curves on the opposite page show graphically the trend of the number of customers of the Company, the K. W. H. generated and purchased and the K. W. H. sold for each year since 1911. These curves are plotted from the statistical data given in the table under the section "Earnings and Expenses" of this report.

The curve for the number of customers extended into the future shows the number in 1922 to be 1007, an increase of 200 customers over 1921. This we believe to be a fair estimate based on past records, as this curve shows a definite trend for two years in the past.

The increase in the K. W. H. sold during the five year period from 1915 to 1921 was 1,618,000 which gives an average yearly increase of 323,600 K. W. H. This figure added to the K. W. H. sold in 1921 or 1,516,282, gives 1,840,000 K. W. H. for 1922.

The total kilowatt hours sold in 1920 and 1921 were 82 per cent. and 74 per cent. respectively of the K. W. H. generated and purchased. The latter percentage is lower than the average due to the increased amount of energy purchased during that year. The purchased energy is received on the low tension side of the switchboard at the plant of the Millville Manufacturing Company and is transmitted at 2300 volts over a tie line of No. 2 insulated copper to the switchboard at the hydro-electric plant of the Millville Electric Light Company. This tie line is too small to carry the purchased energy with reasonable losses and it is proposed to increase the size of the copper this year.

We estimate that the 1,840,000 K. W. H. to be sold in 1922 will be 80 per cent. of the K. W. H. generated and on this basis the total generation in 1922 will be 2,300,000 K. W. H.

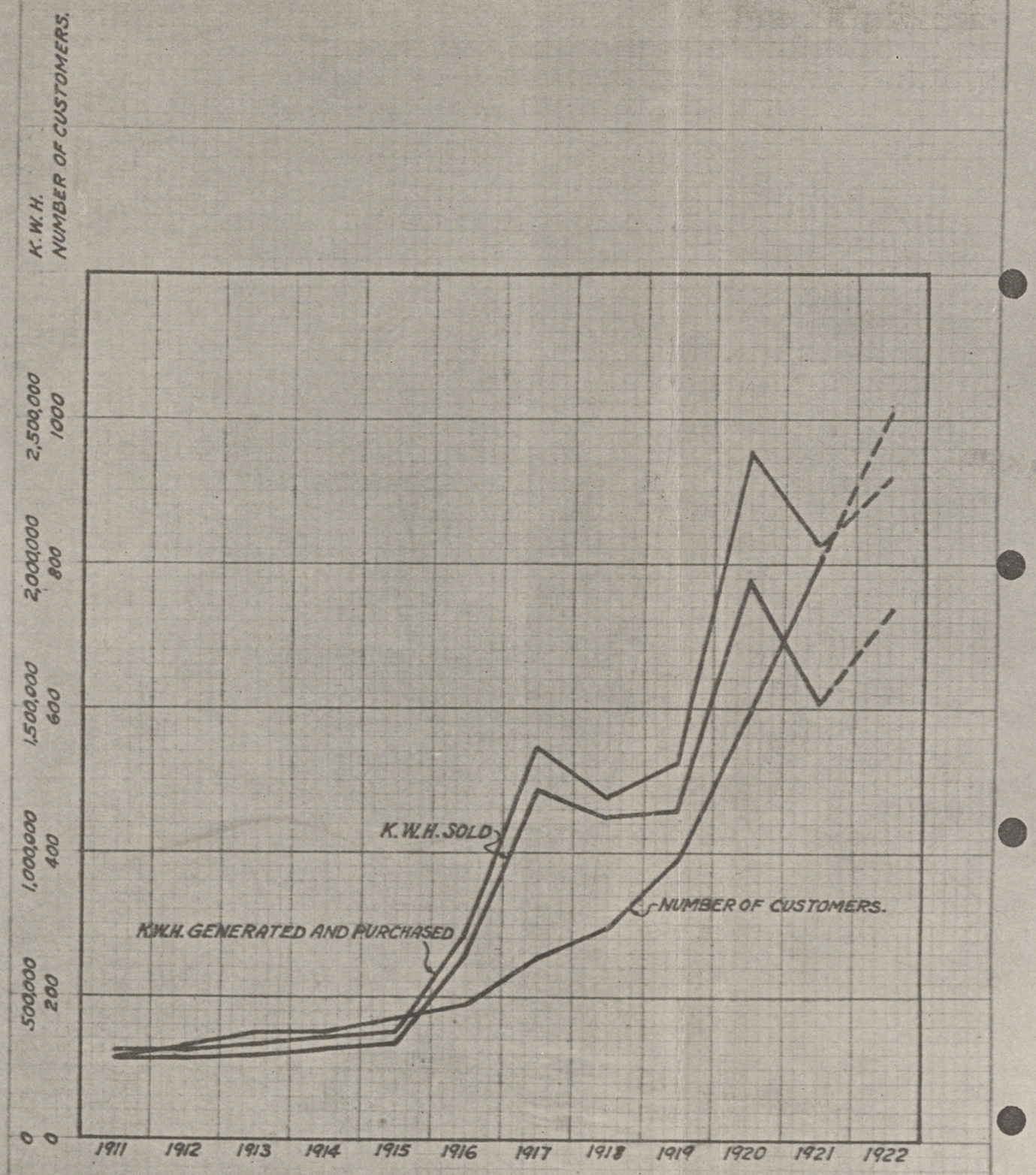
Due to the limited generating capacity of the existing equipment of the Millville Electric Light Company it will be necessary to purchase a portion of the 1922 requirements from the Millville Manufacturing Company. For the energy thus purchased the Light Company will have to pay 3 cents per K. W. H. at the switchboard of the Manufacturing Company, plus a fixed charge of $12.50 per month. Production costs in the steam plant of the Light Company have been in excess of 4 cents per K. W. H. These high costs immediately raise the question of the desirability of a more modern steam plant for the Light Company large enough to supply the total requirements in excess of the capacity of the hydro plant. We believe that the business has been sufficiently developed, taking into consideration the fu- plant.

Improvements of Steam Plant

Based on our studies of the future power requirements in relation to the economy of a modern generating plant, we would recommend for installation at the existing steam plant a 1000 K. W. turbo-generator utilizing steam at a pressure of about 200 pounds and with a slight amount of superheat. To generate this steam, the installation of one new 400 H. P. boiler would be required. The water rate of the new turbine would be so favorable compared to the present engine that it would be possible to use the existing jet condenser at least, until such time as the load requirements exceeded the capacity of the new turbine.

In considering the type of the turbine to be installed, consideration must be given to the steam requirements of the Cumberland County Gas Company.

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These requirements at present amount to about 215,000 pounds of steam per day, and are supplied by high pressure steam from the boilers. Since this steam is reduced in pressure before being used in the gas house, it would be extremely economical from the point of view of combined operation to utilize a bleeder type of turbine, in which a portion of the steam entering the throttle valve of the turbine would be extracted at an intermediate stage, where the pressure is about ten pounds, for use in gas making. The remainder of the steam would pass through the turbine and from there to the condenser. The turbine could be so constructed as to permit of operation at the lower pressure carried by the old boilers when the new boiler was out of service for repair.

In addition to the above, certain other improvements are contemplated as set forth in detail on following page.

Improvements of Hydro Plant

Only certain minor improvements are necessary at the hydro-electric plant as set forth on following page.

Improvements to Distribution System

The improvements to the distribution system include the services, meters and line extensions necessary to serve the 200 additional customers estimated for 1922 and certain other changes as set forth in detail opposite this page. It is expected that the general improvements will reduce the system losses.

Estimated Cost of Improvements

Opposite this page is a detailed estimate of the cost of the improvements hereinbefore referred to based on prices as of January, 1922.

Of the items listed under the heading of Steam Plant, the meters and the draft gauge have already been installed.

1922 CAPITAL REQUIREMENTS

Prices as of January 1, 1922

	Steam Plant	
	Coal Trestle Construction	$ 6,500
	Coal and Ash Conveyor—2 cars and track	650
	Private telephone line between plants	1,200
	2 Steam Flow Meters (one 4″ and one 6″)	1,000
10	1 Water Flow Meter on boiler feed	1,200
	1 Draft Gauge—Hays Type	25
	Graphic Voltmeter and Wattmeter	375
	Necessary additions to building	5,000
	1 400 H. P. boiler erected	13,000
	1 1000 K. W. bleeder turbine	26,000
	Piping, wiring, foundations, etc	8,000
	Miscellaneous	3,000
		$ 65,950
	20% Overheads and Contingencies	13,190
	Total Steam Plant Requirements	$ 79,140
	Hydro Plant	
	Outside Stairway to Cupola	425
	Complete Wall opposite Generator	450
20	Synchroscope, Potential Transformers, Wiring	200
		$ 1,075
	20% Overheads and Contingencies	215
	Total Hydro Plant Requirements	$ 1,290
	Distribution System	
	New Circuit from Station to High & Broad Sts.	
	Circuit from High & Broad Sts. to 3rd & Broad Sts.	
	Circuit from 3rd & Broad Sts. to 3rd & Main Sts. on Third St.	9,530
	River Cable Crossing	1,175
	2300 V. tie line between Steam and Hydro Plants	4,000
	Rearrangement of present lines	4,800
	Tie Lines between Bleachery and Hydro Plant	473
	Miscellaneous Extensions to Primary & Secondary Circuits	2,790
30	Rearrangement of Street Lighting System	1,439
	Additional Circuit and Extensions	4,523
	Switchboard and Regulator	1,400
		30,134
	20% Overheads and Contingencies	6,026
	Total Distribution System Requirements	$ 36,160
	Services and Meters	
	200 Services and Meters estimated:	
	Services @ $9.00 Meters @ $11.00	$ 4,000
	20% Overheads and Contingencies	800
	Total Services and Meter Requirements	$ 4,800
	Total Capital Requirements for 1922	$121,390

As may be seen, the total estimated cost amounts to $121,390 made up as follows:

Steam Plant	$79,140
Hydro Plant	1,290
Distribution System, including meters and services	40,960
Total	$121,390

SUMMARY OF CONCLUSIONS

A summary of our conclusions as set forth in the various sections of the report is as follows:

1. In view of the corporate relationship of the Millville Electric Light Company and the High Pressure Construction and Supply Company we believe that a formal agreement should be executed between the two companies setting forth the services to be performed by the High Pressure Construction and Supply Company and the basis of compensation for same.

2. The property of the Millville Electric Light Company was in good operating condition at the time of our investigation.

3. The territory served comprises one of the most thickly populated sections of the southern part of the State of New Jersey and there are good prospects of a large increase in the business.

4. The original franchise ordinance granted by the town of Millville in 1891 was for a period of three years only and has never been renewed or extended. The company, however, is under the jurisdiction of the Board of Public Utility Commissioners of the State of New Jersey and consequently any new franchise would be subject to the approval of that body.

5. After a careful study of the present rate structure we conclude that there is no discrimination between classes of customers. Considered as a whole and from the point of view of net earnings, the rates are too low to net the company a fair return on the value of its property under present operating conditions. On the other hand, we do not believe that they can be increased without making the cost of the service too high from the point of view of increasing the business.

6. A study of the balance sheet as of December 31, 1921, immediately suggests the desirability of a

financial program leading to a readjustment of liabilities. Capital Assets amount to $347,132.62 compared with Capital Liabilities of $53,900. Current Assets are only $33,993.27 while Current Liabilities are $308,217.81.

Any financial program must of course take into account the earning power of the company. Operations have resulted in a deficit each year and the surplus and reserves as of December 31, 1921, were represented by a net deficit of $8,696.23.

7. Accrued Amortization of Capital of $80,281.55 as shown on the balance sheet as of December 31, 1921, represents the amount charged to depreciation to date. The practice of the company, in accordance with the suggestion of the Board of Public Utility Commissioners, is to credit this account each year with a certain percentage of the plant account value as of the beginning of the year (7 1-2 per cent. since 1919) and to deduct therefrom at the end of the year all maintenance expenditures. While the amount set aside each year under this plan is contingent upon the amount expended for maintenance, we cannot believe that the total thus accumulated to date is fair and reasonable after consideration of the present condition of the property as a whole.

8. Prior to 1920 Earnings and Expenses were comparatively small. During the period from 1911 to 1919 inclusive; Gross Operating Revenue increased from $16,855.39 in 1911 to $52,790.79 in 1919. Operating Expenses increased from $10,804.44 in 1911 to $40,989.40 in 1919. The balance after depreciation and fixed charges varied from a minimum deficit of $802.38 in 1915 to a maximum deficit of $9,683.69 in 1918.

In 1920 the present steam driven generating plant was placed in operation. In that year gross operating revenue increased $50,143.34 over 1919 but at the same time operating expenses increased

$8,085.83 resulting in a deficit balance after depreciation and fixed charges of $64,460.36. A part of this deficit was brought about because the charges to the Gas Company for steam were lower than the actual cost of making same.

In 1921 gross operating revenue increased $7,859.92 over 1920, operating expenses decreased $14,396.07, and non-operating revenue increased $25,279.87. The low increase in gross operating revenue and the large increase in non-operating revenue was due to including revenue from sale of steam to the Cumberland County Gas Company under operating revenue in 1920 and under non-operating revenue in 1921. In the annual report to the Board of Public Utility Commissioners for 1921 the Company included this item in Operating Revenue under the heading of "Sale of Steam." At the time of our investigation the annual report had not been completed and the item was shown on the books under "Non-Operating Revenue," The decrease in operating expenses was due principally to a reduction in the price of coal. The decrease in sales of electrical energy during this year was offset by an increase in rates effective March 1, 1921. The balance after depreciation and fixed charges for this year was a deficit of $9,724.10 increased by certain surplus adjustments to $11,487.01.

As pointed out in the report no rental is paid by the Millville Water Company for the use of certain property of the Millville Electric Light Company; also, the charges to the Cumberland County Gas Company for steam have not included anything for taxes, depreciation or fixed charges. If effect is given in the 1921 statements for appropriate charges for these items and to increased revenue if the rate increases had been in effect for the full year the deficit for the year is reduced to approximately $500 exclusive of any consideration of dividends.

9. A comparison of fixed capital as of December 31, 1921, with our reproduction estimates is as follows:

		Cost of Reproduction New	
	Fixed Capital as of Dec. 31, 1921	Prices as of Jan. 1, 1922	Average Prices as of the period in which property was built
Physical Property		$346,649	$321,578
Overhead Costs	$347,133	53,391	49,533
Working Capital	23,488	23,488	23,488
Going Concern Value	50,000	50,000	50,000
Totals	$420,621	$473,528	$444,599

If accured depreciation is deducted the above totals become:

Fixed Capital plus Working Capital and Going Concern Value	$340,359
Cost of Reproduction New Based on Prices as of Jan. 1, 1922	403,369
Cost of Reproduction New Based on Average Prices during Period in Which Property was built	380,400

After careful consideration of all the elements involved, including the fixed capital accounts, reproduction estimates, including going concern value, the practice of the Board of Public Utility Commissioners and certain decisions of the New Jersey Supreme Court, we are of the opinion that the fair value of the property of the Millville Electric Light Company for rate making purposes is in excess of $400,000, bearing in mind that the Board of Public Utility Commissioners alone has the power to fix such value.

10. The demand on the system in 1922 will exceed the generating capacity of its power plants and it will be necessary to purchase a portion of the requirements from the Millville Manufacturing Com-

pany at 3 cents per K. W. H. at the switchboard of the manufacturing company plus a fixed charge of $12.50 per month. Production costs in the steam plant of the Millville Electric Light Company have been in excess of 4 cents per K. W. H. These high costs immediately raise the question of the desirability of a more modern plant large enough to supply the total requirements in excess of the capacity of the hydro plant. We believe that the business has been sufficiently developed, taking into consideration future growth, to warrant the construction of such a plant.

We recommend the installation at the present steam plant of a 1,000 K. W. turbo-generator together with a new 400 H. P. boiler and necessary auxiliary equipment. In considering the type of turbine consideration must be given to the steam requirements of the Cumberland County Gas Company. These requirements at the present time amount to about 215,000 pounds of steam per day and are supplied by high pressure steam from the boilers of the Light Company. Since this steam is reduced in pressure before being used in the gas plant it would be economical from the point of view of combined operation to utilize a bleeder type of turbine, in which a portion of the steam entering the throttle valve would be extracted at an intermediate stage, where the pressure is about ten pounds, for use in gas making.

For the above and certain other minor improvements at the hydro plant and for extensions and improvements to the distribution system we estimate

that a total expenditure of $121,390 will be required as follows:

Steam Plant	$79,140
Hydro Plant	1,290
Distribution System including Meters and Services	40,960
Total	121,390

Respectfully submitted,

DAY AND ZIMMERMANN, Inc.,

H. R. MARTZ,
Engineer.

D. D.—H. R. M.

MILLVILLE ELECTRIC LIGHT COMPANY

Detailed Appraisal Summary

		Prices as of Jan. 1, 1922.	
10		Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
	I—Land Devoted to Electric Operations (Acct. No. 101)		
	Steam Plant Site	$2,500	$2,500
	Hydro-Plant & Water Plant Site	1,000	1,000
	Water Rights and Right of Way for Wasteway	20,000	20,000
	Plot adjoining Steam Plant Site	2,500	2,500
	Total Land Devoted to Electric Operations	$26,000	$26,000
20	*II—General Equipment* (Acct. No. 107)	$1,069	$625
	III—Dams, Canals and Pipe Lines (Acct. No. 108)		
	Intake	1,190	892
	Flume	3,920	2,740
	Tailrace	2,244	1,660
	Total Dams, Canals and Pipe Lines	$7,354	$5,312
	IV—Power Plant Buildings (Acct. No. 109)		
	Hydro-Electric and Water Plant	17,188	10,916
	Steam Plant	12,822	12,090
30	Total Power Plant Buildings	$29,810	$25,005
	V—Furnaces, Boilers and Accessories (Acct. No. 110)	$55,929	$44,142
	VI—Steam Engines (Acct. No. 111)	$38,649	$30,392
	VII—Turbines and Water Wheels (Acct. No. 112)	$3,346	$1,673
	VIII—Gas Engines (Acct. No. 114)		
	IX—Electric Generators (Acct. No. 115)		
	Hydro-Electric Plant	9,623	6,720
	Steam Plant	17,394	12,710
	Total Electric Generators	$27,017	$19,430

	Prices as of Jan. 1, 1922.	
	Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
X—Accessory Electric Power Equipment (Acct. No. 116)		
Hydro-Electric Plant	$20,195	$17,167
Steam Plant	4,927	4,435
Total Accessory Electric Power Equipment	$25,122	$21,602
XI—Miscellaneous Power Plant Equipment (Acct. No. 117)		
Hydro-Electric Plant	4,267	2,987
Steam Plant	696	557
Total Miscellaneous Power Plant Equipment	$4,963	$3,544
XII—Poles and Fixtures (Acct. No. 120)		
Poles	32,644	27,747
Guys	2,753	2,340
Cross Arms	12,094	10,280
Miscellaneous Brackets	807	686
Total Poles and Fixtures	$48,298	$41,053
XIII—Distribution System (Acct. No. 123)		
Wire	17,329	15,596
Insulators	6,162	5,546
Total Distribution System	$23,491	$21,142
XIV—Line Transformers and Devices (Acct. No. 124)		
Line Transformers	16,622	14,129
Line Devices	267	227
Total Line Transformers and Devices	$16,889	$14,356
XV—Electric Services (Acct. No. 125)	$5,725	$5,153
XVI—Electric Meters (Acct. No. 126)		
Electric Meters on Lines	$8,587	$7,298
Electric Meters in Stores	547	547
Total Electric Meters	$9,134	$7,846
XVII—Electric Meter Installation (Acct. No. 127)	$648	$551

	Prices as of Jan. 1, 1922.	
	Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
XVIII—Municipal Street Lighting System (Acct. No. 128)		
Brackets and Miscellaneous Material	7,557	6,424
Lamps and Fixtures	9,052	7,694
Wire	6,035	5,432
Total Municipal Street Lighting System	$22,644	$19,550
XIX—Electric Tools and Implements (Acct. No. 132)	$225	$191
XX—Electric Laboratory Equipment (Acct. No. 133)	$336	$286
Total Items I to XX inclusive	$346,649	$285,853
XXI—Indirect or Overhead Costs		
1. Preliminary and Organization Costs—2% of Items I to XX	6,932	5,717
2. Administration Costs—2% of Items I to XX	6,932	5,717
3. Engineering and Superintendence—6% of Items I to XX	20,799	17,151
4. Taxes and Insurance—1½% of Items I to XX	5,200	4,288
5. Loss of Interest during Construction—3½% of Items I to XX and preceding items	13,528	11,155
Total Indirect Costs	$53,391	$44,028
XXII—Working Capital		
1. Materials and Supplies	$2,708	$2,708
2. Cash	20,780	20,780
Total Working Capital	$23,488	$23,488
Total Items I to XXII inclusive	$423,528	$353,369
I—Land Devoted to Electric Operation (Acct. No. 101)		
1 irregularly shaped plot of ground approximately 308 x 342 ft. containing approximately 2.32 acres. Plot adjoins the gas plant and is occupied by new steam plant	$2,500	$2,500
1 rectangular shaped plot 115 x 115 ft. at Sharp Street and Canal Bridge containing approximately 0.33 acres	1,000	1,000
Water Rights on Maurice River sufficient to develop 100 HP. and right of way for waste way for the water discharged from the water wheels	20,000	20,000

MILLVILLE ELECTRIC LIGHT COMPANY

OPERATING STATISTICS FOR YEARS 1919 TO 1922 INCLUSIVE AS SHOWN BY THE COMPANY'S RECORDS AND ADJUSTMENTS IN 1922 RESULTS FOR POSSIBLE ECONOMIES, REVISION OF CHARGES FOR STEAM TO GAS COMPANY AND FOR PURCHASED POWER

B. P. U. C. ACCT. NO.		1919	1920	1921	1922	1922 results adjusted on the basis of possible economies and revision of of charge for Steam to Gas Co.	1922 results adjusted on the basis of purchasing power requirements in excess of Hydro Plant output.	1923
	K. W. H. SOLD							
34-9	Municipal Street Lighting Arcs	41,373	41,373	43,289	41,949	41,949	41,949	41,200
34-9	Municipal Street Lighting Incandescents	272,940	269,985	276,580	281,950	281 950	281,950	289,000
34-10	Commercial Metered Lighting	213,677	321,932	348,762	423,093	423,093	423,093	525,000
34-11	Commercial Metered Power	618,667	1,316,140	847,651	781,552	781,552*	781,552	175,000
34-	Commercial Flat Rate Lighting	9			1,503	1 503	1,503	625,000
34-13	Total K. W. H. Sold	1 146,666	1,949,480	1,516,282	1,530,047	1,530 047**	1,530,047	1,653,000
	USED BY COMPANY							
	Station Lighting		12,319	13,544	35,271	35,271	20,000	
	Station Auxiliaries		144,000	246,557	391,481	217,811		
	Other Company Uses		2,696	2,571	1,500	1,500	1,500	
34-14	Total K. W. H. Used by Company	15,452	159,015	262,672	428,252	254 582	21,500	
34-17	Total K. W. H. Sold and Used	1,162 118	2,108,495	1,778,954	1,958,299	1,784,629	1,551,547	
34-18	K. W. H. Lost and Otherwise Unaccounted for	150,735	277,298	279,901	397,409	371,409	371,409	
34-5	Total	1,312,853	2,385,793	2,058,855	2,355,708	2,156,038	1,922 956	
34-3	K. W. H. Hydro-generation	521,943	515,463	533,995	577,890	642,690	642,690	
34-1	K. W. H. Steam-generation		1,126,730	657,200	1,519,500	1,255,030		
34-4	K. W. H. Purchased	790,910	743,600	867,660	258,318	258,318	1,280 266	
	Total	1,312,853	2,385,793	2 058,855	2,355,708	2,156,038	1,922,956	
35-8	Number of Customers End of Period	393	586	807	1,123	1,123	1,123	
35-3	Number of Arc Lamps	29	29	29	29	29	29	
35-4	Number of Incandescent Lamps	508	525	548	595	595	595	
35-7	Total Number of Street Lamps	537	554	577	624	624	624	
	OPERATING REVENUES							
	Municipal Street Lighting Arcs	$ 1,594	$ 1,594	$ 2,132	$ 1,592	$ 1,592	$ 1,592	
	Municipal Street Lighting Incandescents	9,800	9 831	13,806	10 781	10,781	10,781	
	Commercial Metered Lighting	20,958	31 770	47,695	63,734	63,734	63,734	
	Commercial Metered Power	20,427	37,727	47,162	47,498	47,498	47,498	
	Commercial Flat Rate Lighting	12			303	303	303	
	Total Sales of Current	52,791	80,972	110,795	123,908	123,908	123,908	
	Other Miscellaneous Electric Revenue			62	121	121	121	
	Sale of Steam		21,962	27,718	30,366	38,740		
	Total Operating Revenues	52,791	102,934	138,575	154,395	162,769	124,029	
	OPERATING EXPENSES							
1	Production							
	Hydro-Electric Plant							
401	Labor	5,355	6,026	5,532	5,226	5,226	5,226	
403-e	Lubricants		471	329	167	167	167	
403-d	Station Supplies & Expenses	522	525	864	1,707	1,707	1,707	
411	Repairs Station Buildings	15	30	238	576	576	576	
413	Repairs Hydraulic Equipment	43	934	538	193	193	193	
415	Repairs Electric Equipment	232	1,026	539	1,212	1,212	1,212	
416	Miscellaneous Station Repairs	85	2					
	Total Hydro-Electric Production	6,252	9,044	8,040	9,081	9,081	9 081	
	STEAM-ELECTRIC PLANT							
401-b	Boiler Labor		9,566	6,927	7,264	7,264		
401-d	Station Labor		5,809	4 151	5,348	5,348		
402	Fuel		67,633	32,280	43,331	38,770		
403-c	Lubricants		1,602	385	556	556		
403-d	Stations Supplies and Expenses		2,125	3,389	3,614	3,614		
411	Repairs Station Buildings		39	545	24	24		
412-a	Repairs Steam Equipment other than Engines		2,061	7,421	3,913	3,913		
412-d	Repairs Steam Engines			10,246	3,246	3,246	2,400	
415	Repairs Electric Equipment		210	192	162	162		
416	Miscellaneous Station Repairs		2		60	60		
	Total Steam-Electric Production		89,047	65,536	67.518	62,957	2,400	
	Total Hydro and Steam Electric Production	6,252	105,656	73,576	76,599	72,038	11,481	
419	Electric Energy Purchased	15,968	18.625	26,180	7,900	7,900	34,237***	
	Total Production Expense	22,220	124,279	99 755	84,498	79,938	45,718	
IV.	DISTRIBUTION EXPENSES							
440	Wages, Supplies and Expenses	1,320	1,532	2,756	3,054	3,054	3,054	
451	Repairs to Lines	1,588	4,014	3,112	2,609	2,609	2,609	
452	Repairs to Services	2	2	363	430	430	430	
453	Transformer Maintenance		97	238	11	11	11	
454	Meter Maintenance	629	417	71	180	180	180	
	Total Distribution Expense	3,529	6,063	6,545	6 285	6,285	6,285	
V.	UTILIZATION EXPENSES							
464	Municipal Street Arc Lamp Maintenance	868	873	596	978	978	978	
465	Municipal Street Incandescent Lamp Maintenance	6,855	3,298	4,209	6,478	6,478	6,478	
	Total Utilization Expenses	7,722	4,171	4,804	7,456	7,456	7,456	
VI.								
470	Commercial Administration	1,045	886	771	679	679	679	
VII.								
475	Business Promotion	90	86	294	197	197	197	
VIII.	GENERAL & MISCELLANEOUS EXPENSES							
481	Salaries and Expenses of General Officers	1,216	3,240	3,223	3,416	3,416	3,416	
482	Salaries and Expenses of General Office Clerk	2,381	3,080	3,177	3,488	3,488	3,488	
483	General Office Supplies and Expenses	637	895	964	1,193	1,193	1,193	
484	General Law Expenses	969	1 490	1,598	6 454	6,454	6,454	
485	Miscellaneous General Expenses	440	2,088	944	625	625	625	
486	Insurance	399	418	2,499	2,792	2,792	2,792	
489	Injuries and Damages	21	196	131	28	28	28	
490	Stationery and Printing	285	201	368	555	555	555	
491	Store and Garage Expenses	26	27	256	26	26	26	
492	Miscellaneous Adjustments		230 (red)	108 (red)	260 (red)	260 (red)	260 (red)	
	Total General and Miscellaneous Expenses	6,373	11,406	12,510	18,317	18,317	18,317	
494	GENERAL AMORTIZATION	6,691	13,134	400	11,697	11,697	11,697	
495	TAXES	2 728	2,724	6,333	9,132	9,132	9,132	
496	UNCOLLECTABLE BILLS		126	26	37	37	37	
	Total Expenses Including General Amortization and Taxes	$50,408	$155,060	$131,439	$138 297	$133,738	$99,862	
	Total Operating Revenue Less Total Expense, Including General Amortization and Taxes	$2,383	$52,126 (red)	$7,136	$16,098	$29,031	$24,167	

* Of this total 629,710 was sold to Millville Water Company, leaving 151,842 sold to other customers.
** Of this total 629,710 was sold to Millville Water Company, leaving 900,337 sold to other customers.
*** Rate—$ 0.267 per K. W. H.

	Prices as of Jan. 1, 1922.	
	Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
1 irregularly shaped plot, approximately 343 x 215 ft. adjoining plot occupied by steam plant and containing approximately 1.57 acres	2,500	2,500
Total Item I—Land Devoted to Electric Operation	$26,000	$26,000
II—General Equipment (Acct. No. 107)		
1 Ford light body truck, 1916 model	$406	$200
1 Ford light body truck, 1917 model	363	200
Miscellaneous furniture and fixtures	300	225
Total Item II, General Equipment	$1,069	$625
III—Dams, Canals and Pipe Lines (Acct. No. 108)		
1 water intake from canal approximately 17 x 22 ft., with masonry wall 22 in. thick, average 11 ft. high, 3 in. flooring, iron screen 17 x 10 ft., 2 gates of 3 in. wood, hand operated by rack and pinion with wooden housing 22 x 14 x 8 ft. 6 in. and fencing	1,190	893
1 ⅜ in. riveted steel flume, 60 in. diameter x 153 ft. long, laid underground from forebay to water wheels supported by 2 18 in. cast iron columns	3,920	2,740
1 tailrace, 15 ft. wide, 90 ft. long with retaining walls of masonry, 36 in. thick x 8 ft. high	2,244	1,680
Total Item III, Dams, Canals and Pipe Lines	$7,354	$5,312
IV—Power Plant Buildings (Acct No. 109)		
Hydro-Electric Plant and Water Plant		
1 one story brick building, 57 x 35 ft. 6 in. x 10 to 13 ft. high with basement adjoining building, housing water company equipment; masonry founda-		

		Prices as of Jan. 1, 1922.	
		Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
	tions, brick walls, cement floor in basement, tongued and grooved wooden first floor and siding wood windows and doors, tar on tin roofing, on wood sheathing, 8 x 20 ft. wood monitor,		
10	electric light, steam heat	4,450	3,340
	1 frame lean-to over water wheels, 36 ft. 6 in. x 27 ft. 6 in. x 11.5 ft. high, masonry foundations, west wall brick, south wall wood sheathing (no north or east walls), cement floor and wood gallery and step, tin roofing on wood sheathing, electric lighting and steam heating	$1,147	$805
	1 one story brick building 35 x 35 x 13 ft. and 16 ft. high, with basement, housing water company equipment; masonry		
20	foundations, brick walls (no east wall), cement floor in basement 8 ft. below first floor which is tongued and grooved, wood windows and doors, tin roofing on wood sheathing,		
	with tongued and grooved lining	3,988	2,990
	1 one story frame building 50 x 16 x 15 ft. to square with 3 ft. rise adjoining brick building, housing electrical equipment, containing heating boiler for supplying steam heating system for all buildings in the group, walls of 1 in. boards on wooden		
30	frame roofing ruberoid on 1 in. boards, floor brick, wood windows and doors, electric light, steam heat, no basement (no north wall)	1,162	698
	1 100 H. P. horizontal return tubular boiler, operated at 15 lb. steam pressure for heating system	1,800	540
	1 2 ft. diameter steel stack, 50 ft. high, guyed on brick base 6 x 6 x 6 ft. and masonry foundation 10 x 10 x 13 ft.	779	234
	1 one story frame building 50 x 34 x 15 ft. to square with 6 ft.		

	Prices as of Jan. 1, 1922.	
	Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
rise adjoining building, housing steam boiler for heating, containing water company filters, walls of 1 in. boards on wooden frame roofing ruberoid on 1 in. boards, floor timber, wood windows and doors, electric light, steam heat, no basement (no north wall)	$2,356	$1,410
1 one story frame lean-to, 20 x 42 x 23 ft. housing water company equipment; situated between shed housing water wheels and building for water company filters. Walls of 1 in. boards, on wood framing, ruberoid roofing on 1 in. boards, cement floor, no basement (no north or east wall).	1,506	900
Total Hydro-Electric Plant and Water Plant	$17,188	$10,915
Steam Plant		
1 concrete block building 115 x 42 x 23 ft. to eaves and 39 ft. to gable; concrete block walls including dividing wall between engine and boiler room except east wall which is tar paper on wood sheathing, wood trusses, and iron tie rods, maple floor in engine room and cement floor in basement and boiler room, wood windows and doors, double hipped roof, wood stairs with pipe railing, electric lighting	11,422	10,950
1 coal trestle, 14 bents of heavy timbers, not erected	$1,200	$1,140
Total Steam Plant	$12,622	$12,090
Total Item IV, Power Plant Buildings	$29,810	$23,005
V—*Furnaces, Boilers and Accessories* (Acct. No. 110)		
Steam Plant		
2 Babcock & Wilcox boilers, vertical water tube, 192 4 in. tubes 18 ft. long, 2 42 in. drums		

Prices as of Jan. 1, 1922.

		Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
10	½ in. thick, built for 200 lbs. maximum pressure, 400 H. P. each, with Huber hand stokers hand fired operating at 135 lbs. pressure, complete installed in pressed brick setting with Diamond soot blowers, hand operated dampers,	31,032	21,722
	1 boiler feed pump, Doane Pump Company, 12 x 7 x 10 in., No. 27938, horizontal duplex, plunger type; end packed, on concrete foundations	1,212	909
	1 automatic damper regulator	105	63
	1 feed water heater, 60 in. high x 36 in. square, Webster, open type, 600 H. P. with iron stand and concrete foundations	971	874
20	1 Hays automatic CO 2 recorder, No. 985, Paul B. Huyette Co., Phila.	380	342
	1 stack, ¼ in. steel, 100 ft. high 72 in. diameter double guyed on footing of pressed brick 12 ft. square x 40 ft. high with fire brick breeching, 6 x 4 ft. 6 in. x 22 ft. long, 9 in. walls, supported on steel T beams spaced 7 in. apart, supported on boiler setting and 9 in. I beams on 3 6 in. cast iron columns, 7 ft. long	$7,339	$6,600
30	1 hot well (old) 5½ ft. diameter x 10 ft. deep with 8 in. brick walls	199	149
	1 hot well (new) 5 ft 3 in. x 6 x 3 ft. deep with 10 in. concrete walls and 10 in. concrete floor	73	58
	1 boiler feed pump, 12 x 7 x 10 in., Worthington horizontal, duplex, plunger type, end packed, on concrete foundations	1,212	1,030
	1 automatic combustion control for two boilers, "Gray System" made by Automatic Fuel & Saving Co., containing the following equipment:		
	1 air receiving tank, 12 in.		

	Prices as of Jan. 1, 1922.		
	Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation	
diameter x 5 ft. long 1 air pump (Union Pump Company) 2 1 in. Mason automatic regulating valves 2 14 in. turbine blower 1 cabinet	3,300	3,300	10
Power plant piping including steam exhaust, condenser, boiler feed, cooling basin, city water supply, drain lines, installed complete with fittings and covering	10,108	9,095	
Total Item V, Furnaces, Boilers and Accessories	$55,929	$44,142	
VI—Steam Engines (Acct. No. 111) *Steam Plant*			
1 Rice & Sargeant steam engine, 18 x 36 x 32 in. stroke, horizontal cross compound Corliss valve, 750 H. P., 100 r.p.m., operating under 135 to 140 lb. steam pressure complete with throttle valve, oiling system, direct connected to generator with receiver and automatic stop on concrete foundation	$21,766	$15,200	20
1 12 x 12 in. horizontal automatic high speed steam engine, 275 r.p.m., made by Ames Iron Works, complete with throttle valve, steam seperator on concrete foundation (this engine is direct connected to Eddy exciter)	2,550	1,790	30
2 centrifugal pumps, Goulds Mfg. Co., No. 3030, Size 8, 1340 gals. per minute, 10 in. suction, 8 in. discharge, 1170 r.p.m., 35 ft. head, direct connected to motor, on iron base and concrete foundation	1,669	1,500	
1 cooling basin, 80 x 52 x 6 ft. 6 in., concrete walls 2 ft. thick at base tapering to 6 in. at top, with 12 in. concrete floor including 5 and 6 in. cast iron piping and fittings and 18 1¼ in. Schutte & Koerting nozzles	8,522	8,100	

	Prices as of Jan. 1, 1922.	
	Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
1 multi-jet condenser, Schutte & Koerting Co. No. 35½, 26 in. vacuum	2,747	2,470
1 vacuum trap, Strang's, 1½ in.	127	121
1 oil separator, 20 in. exhaust line, made by Harrison Safety Boiler Co.	450	427
1 oil supply system, Bowser Company, No. 4F3, 1000 H. P., 90 gallon filter tank, 119 gallon drip tank	550	522
1 American steam engine indicator with outside spring and 1 planimeter	210	210
1 oil pump, Worthington vertical single acting, 2 x 3 x 2, for oil lubricating system	58	52
Total Item VI, Steam Engines	$38,649	$30,392
VII—Turbines and Water Wheels (Acct. No. 112)		
Hydro-Electric Plant		
1 90 H. P. reaction water wheel, horizontal, Geyelene, inlet 38 x 60 in., single row of guides and blades, 7 in. shaft, ball governor cast iron casing supported by lugs, resting on steel beam construction over tailrace and 1 50 H. P. water wheel similar to above and direct connected to it	3,346	1,673
Total Item VII, Turbines and Water Wheels*	$3,346	$1,673
VIII—Gas Engines (Acct. No. 114)		
Hydro-Electric Plant		
1 gas engine, Fairbanks Morse, 50 H. P., 4 cycle, single trunk piston, 200 r.p.m. (This item of property has been disconnected and is no longe used in the public service.)		
IX—Electric Generators (Acct. No. 115)		
Hydro-Electric Plant		
1 alternating current generator, General Electric Co., 300 K. W.,		

	Prices as of Jan. 1, 1922. Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
Type ATS, Form P, 2300 volts, 450 r.p.m., with 42 in. paper faced, 36 in. face pulley and 1 36 in. diameter x 8 in. solid steel pulley, on concrete foundation	$5,785	$4,620
1 continuous current generator, General Electric, 14 K. W., 1175 r.p.m., shunt wound, H161030, Type CO-15, Form A1042, 125 volts, full load, 112 amps., on adjustable base, used as exciter for 300 K. W. generator, belt driven on concrete foundation	604	483
1 brush arc light generator, No. 9½, C-627, 2 circuit, 8000 volts, 700 r.p.m., 100 arc light capacity with 22 in. diameter, 12 in. paper faced pulley on concrete foundation, complete with 1 Thompson arc meter, 11 amp., and 3 single pole, single throw knife switches on wooden panel	3,234	1,617
Total Hydro-Electric Plant	$9,623	$6,780
Steam Plant		
1 alternating current generator, General Electric Co., 500 K. W., Type ATB, Form E, Class 48-500A-150, revolving field engine type, 3 phase, 60 cycles, direct connected to 750 H. P. engine	$9,581	$6,700
1 exciter, 50 K. W., Eddy, multipolar, 125 volts, 275 r.p.m., 400 amps., Type VI, No. 9663, direct connected to Ames engine on same foundation	2,148	1,510
1 motor generator set used as exciter to 500 K. W. generator: 1 50 H. P. induction motor Type C, Westinghouse, 3 phase 60 cycle, 850 r.p.m., Serial No. 311178, 220 HMF, 125 amps. per terminal 1 Bullock generator, Bullock Elec. Mfg. Co., No. 14933, 120 volts, (full load), 292 amps., 850 r.p.m., On concrete foundation 7 x 5		

		Prices as of Jan. 1, 1922.	
		Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
	x 10 ft. and complete with auto starter, 3 phase, 220 volts 60 cycle, 30-50 H. P., No.290472 Westinghouse	5,055	4,297
10	1 direct current generator, General Electric Co., Type 1B, No. 14921, Class 225-1900, Form 8, 125 volts, 1900 r.p.m., 25 K. W. (Not in use)	493	164
	1 direct current generator, General Electric Co., Type CO-2, No. 137362, 2000 r.p.m., 2¼ K. W., 125 volts, (not in use)	117	39
	Total Steam Plant	$17,394	$12,710
	Total Item IX, Electric Generators	$27,017	$19,430
	X—Accessory Electric Power Equipment (Acct. No. 116)		
20	*Hydro-Electric Plant*		
	3 300 K. V. A. Westinghouse, transformers, single phase, 60 cycle, 6600-2300 volts on concrete foundation	$5,031	$4,270
	2 induction feeder regulators, 16½ K. W., single phase, 60 cycles, 2200 primary voltage, automatic, motor operated (not connected in)	1,620	1,378
30	3 regulating transformers for series incandescent lamp, 34 K. V. A., 2200 volts, primary, 66 amp.	2,688	2,290
	1 Mercury arc rectifier, General Electric, Type MS., Form B, 20 K. W., 1100 primary volts, 4000 rectified volts, 5 amps., 60 cycles	2,065	1,760
	1 auto transformer, 30 K. V. A., 2200 to 1100 volts (disconnected)	195	166
	1 high efficiency transformer, 15 K. V. A., 1100-110 volts, Pittsburg Transmission Company	218	185
	1 switchboard, 11 panels, 2 sections, each 2 in. thick, total height 88 in. with varying width		

MILLVILLE ELECTRIC LIGHT CO.

COMPARATIVE STATEMENT OF EARNINGS AND EXPENSES

YEARS ENDED DECEMBER 31

	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921
GROSS OPERATING REVENUE											
Municipal Street Lighting—Arc	9,960.53	10,032.09	8,483.99	10,134.39	10,002.31	3,234.63	1,592.86	1,588.84	1,593.84	1,593.99	2,131.53
" " " —Incandescent			34.56	34.56	80.56	6,980.65	9,482.70	9,709.73	9,799.92	9,880.54	13,805.78
Commercial Metered Lighting	5,258.18	7,292.51	7,352.58	8,833.21	9,247.21	12,082.02	15,218.14	15 813.72	20,958.16	31,770.33	47,694.83
" " Power	606.00	431.63	628.01	603.59	1,241.91	8,356.90	19,426.44	21,482 23	20,426.77	37,726.99	47,161.91
" Flat Rate Lighting	1,023.10	600.09	612.50	385.89	301.80	186.19	103.20	14.35	12.10		
Other Electric Revenue	7.58	63.61	78.53	125.19	53.35			41.00		** 21,962.28	
TOTAL	16,855.39	18,424.93	17,190.17	20 116.83	20,927.14	30,840.39	45,823.34	48,649.87	52,790.79	102,934.13	110,794.05
OPERATING EXPENSES											
Production	4,836.43	5,891.87	10,090.97	7,387.70	7,274.00	11,514.07	22,244.48	21,837.47	22,220.60	124 278.75	99,755.14
Distribution	2,480.28	716.72	1,043.90	2,197.11	2,738.73	625.11	1,083.83	1,694.24	3,538.17	6,063.39	6,544.59
Utilization		1,403.81	1,720.73	1,803.31	1,093.84	2,039.43	5,708.78	5,257.79	7,722.33	4,171.01	4,804.07
Commercial	*				61.49	65.39	166.49	931.39	1,045.01	886.36	770.71
New Business	*	3.81		41.41	24.58	723.06	183.14	199.83	90.13	86.01	294.43
General	3,487.73	7,100.75	7,344.81	5,344.42	4,757.42	6,648.08	7,592.11	8,276.34	6 373 16	3,589.71	12,510.21
TOTAL	10,804.44	15,116.96	20,200.41	16,773.95	15,950.06	21,615.14	36,978.83	38,197.06	40,989.40	139,075.23	124,679.15
Gross Revenue Less Operating Expenses	6,050.95	3 307.97	**3,010.24**	3,342.88	4,977.08	9,225.25	8,844.51	10,452.81	11,801.39	**36,141.10**	**13,885.11**
Taxes	1,444.02	1,458.52	1,492.86	1,411.02	1,458.29	1,817.38	2,480.80	3,001.08	2,727.87	2,724.38	6,333.59
Gross Revenue Less Operating Exps. & Taxes	4,606 93	1,849.45	**4,503.10**	1,931.86	3,518.79	7,407.87	6,363 71	7,451.73	9,073.52	**38,865.48**	**20,218.70**
Non-Operating Income—Net	1,147.31	1,372 08	1,048.04	1 144.46	1,342.17	856.55	1,202.89	3,841.05	3,469 08	2,501.57	27 781.44
Gross Operating Income	5,754.24	3,221.53	**3,455.06**	3,076.32	4,860.96	8,264.42	7,566.60	11,292.78	12,542 60	**36,363.91**	7,562.74
Income Deductions (Bad Debts)						1.75		1,373 95		126 06	25.64
Net Corporate Income	5,754.24	3,221.53	**3,455.06**	3,076.32	4,860.96	8,262.67	7,566.60	9,918.83	12,542 60	**36,489.97**	7 537.10
FIXED CHARGES											
Interest on Unfunded Debt		1,668.79	372.84	709.76	909.09	884.85	7,128.56	11 680.46	12,653.86	14,836.11	16,860.74
Balance after Fixed Charges	5 754.24	1,552.74	**3,827.90**	2,366 56	3,951.87	7,377.82	438.04	**1,761.63**	**111.26**	**51,326.08**	**9,323.64**
Allowance for Amortization of Capital	7,204 28	7,491.75	4,106 38	7,677.69	4,754.25	8,372.19	7,834 62	7,922.06	6,690.79	13,134.28	400.46
BALANCE	**1,450.04**	**5,939.01**	**7,934.28**	**5,311.13**	**802 38**	**994.37**	**7,396.58**	**9,683 69**	**6,802 05**	**64,460.36**	**9 724.10**
Surplus Adjustments—Net		**238.69**	429.64	683.47	**1,878.82**	. **859.24**	92 08	378.00	20 30	286.08	1,762.91
Balance Applicable to Dividends and Surplus	**1.450.04**	**5,700.41**	**8,363 92**	**5,994.60**	1,076.44	**135.13**	**7,488.66**	**9,305.69**	**6,822.35**	**64,746 44**	**11,487.01**
Dividends	2 500.00										
Net Increase or **Decrease** in Surplus	**3,950.04**	**5,700.41**	**8,363.92**	**5,994.60**	1,076.44	**135.13**	**7,488.66**	**9,305.69**	**6,822.35**	**64,746.44**	**11,487.01**
Surplus Beginning of Period	28,378.03	24,427.99	18 727 58	10.363.66	4,369 06	5,445.50	5 310 37	**2,178.29**	**11,483.98**	**18,306.33**	**83,052.77**
Surplus End of Period	24,427.99	18,727.58	10,363.66	4,369.06	5,445.50	5 310.37	**2,178.29**	**11,483.98**	**18,306 33**	**83,052.77**	**94,539.78**

* Included in General Expense.
** Sale of Steam to Gas Company.

	Prices as of Jan. 1, 1922. Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
of panels; total length of switchboard=18 ft. 6 in. for control of arc machine and mercury arc rectifier, arc lamp and incandescent light circuits, 300 K. W. generator, motors on pumps, feeder from bleachery, incoming 500 K. V. A. circuit, 5 transformers, etc. with full equipment of voltmeter, ammeters, wattmeters, circuit breakers, voltage regulators, etc., completely installed	$6,380	$5,420
20 2300 volt Garton & Daniels lightning arresters	126	107
22 50 amp. Garton & Daniels choke coils, Type AF	188	160
2 direct current Westinghouse lightning arresters	84	71
Station wiring, including insulators, cleats, brackets, etc.	1,600	1,360
Total Hydro-Electric Plant	$20,195	$17,167
Steam Plant		
1 induction motor, 40 H. P., Westinghouse, Type CS, 220 volts, 60 cycles, 3 phase, 1170 r. p. m., on iron base with centrifugal pumps	532	479
1 switchboard, 3 panels, 88 in. high x 56 in. wide, 2 in. black slate for control of 500 K. W., 6600 volt generator, 6600 volt circuit and exciters for generator, with full equipment of ammeters, voltmeters, wattmeters, circuit breakers, switches, etc., completely installed	2,100	1,890
3 25 K. V. A. transformers, Type SK, 6600-220 and 110 volts, on concrete foundation	897	807
1 electrolytic lightning arrester, Type AK, 5200 to 7250 volts, 3 phase, with 3 horn gap, 6600 volt and 3 choke coils	648	584
Station wiring including insulators, cleats, brackets, etc	750	675
Total Steam Plant	$4,927	$4,435
Total Item X, Accessory Electric Power Equipment	$25,122	$21,602

Prices as of Jan. 1, 1922.

		Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
	XI—Miscellaneous Power Plant Equipment (Acct. No. 117)		
	Hydro-Electric Plant		
	2 8 ft. x 20 in. solid cast iron pulleys on water wheel shaft	374	
10	2 1 15-16 in. cast iron adjustable hangers with cast iron brackets	10	
	1 20 x 6 in. pressed steel pulley	6	
	1 24 x 4 in. pressed steel pulley	6	
	4.5 ft. of 1 15-16 in. steel shafting	2	
	25 ft. rubber and canvas belting 6 in. wide	25	
	30 ft. 4 in. leather belting	29	
	68 ft. 20 in. rubber belting	136	
	68 ft. 20 in. Goudy belting	109	
	1 30 x 18 in. solid cast iron pulley	27	
	3 4 15-16 in. flanged coupling	107	
20	6 4 15-16 in. ring oiling pillow block on cast iron stand, 3 1-2 ft. high	507	
	38 ft. 4 15-16 in. steel shafting	106	
	2 32 x 6 in. gears, 96 teeth	80	
	1 11 x 9 in. gear, 22 teeth	43	
	1 55 x 36 in. split cast iron pulley	62	
	1 4 15-16 in. keyed cast iron flanged coupling	36	
	1 4 15-16 in. Moore & White, 48 in. diameter x 12 in. face, split pulley clutch with 5 ft. wrought iron handle	192	
	1 24 in. x 63 ft. 2 ply leather belting	415	
30	1 10 1-2 in. x 35 ft., 2 ply leather belting	93	
	2 36 x 6 1-2 in. face shafting connecting clutch	194	
	6 4 13-16 in. ring oiling pillow blocks, cast iron adjustable on brick foundation	158	
	1 cast iron pulley 16 in. face, 24 in. diameter, idler	18	
	1 pulley clutch, 30 in. diameter x 15 in. double shoe grip	142	
	4 ft. 2 13-16 in. steel shafting	3	
	2 2 13-16 in. adjustable pillow blocks on brick foundation	16	
	1 24 x 14 in. split cast iron pulley	20	

Prices as of Jan. 1, 1922.

	Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
Installation of shafting	1,166	
1 cupboard, tongued and grooved pine, double door 4 x 4 1-2 x 1 ft.	20	
3 chairs	27	
1 5 ft. plain bench	10	
1 tool shelf	4	
1 magnetic ringer for circuit testing	40	
1 fire alarm outfit, 15 in. brass electric bell	24	
50 ft. 3 in. canvas fire hose and nozzle in rack	50	
1 double wheel 4 castor truck, 15 x 20 in. wood platform	10	
Total Hydro-Electric Plant	$4,267	$2,987
Steam Plant		
1 Bristol recording thermometer 9 in. face with connection and mounting board	$70	
1 Bristol recording press gauge, 12 in. face, with connection to city water lines	67	
2 Lonergan press gauges, 10 in. face, brass, registering 0 to 30 lbs.	30	
1 Bristol recording press gauge, 9 in. face	54	
1 Bristol recording vacuum gauge, 12 in. face	67	
1 portable 2 ton chain hoist, Karrington	20	
1 portable 1 ton chain hoist Franklin	15	
1 portable 1 ton chain hoist Franklin	15	
3 oil cans, 106 gallons, with pump	37	
1 15 in. electric fan	16	
1 Lagonda electric resurfacer	95	
Miscellaneous firing tools	35	
2 15 ft. ladders	20	
1 iron wheelbarrow	10	
1 Fairbanks 20 x 30 in. platform scale, 1400 lbs. capacity	70	
Miscellaneous small tools, buckets, etc.	75	
Total Steam Plant	$696	$557
Total Item XI, Miscellaneous Power Plant Equipment	$4,963	$3,544

	Prices as of Jan. 1, 1922.	
	Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
XII—Poles and Fixtures (Acct No 120)		
Poles		
20 25 ft. chestnut poles	$249	
288 30 ft. chestnut poles	4,910	
842 35 ft. chestnut poles	18,524	
158 40 ft. chestnut poles	4,631	
120 45 ft. chestnut poles	4,204	
3 50 ft. chestnut poles	126	
Total Poles	$32,644	$27,747
Guys		
193 head guys	1,316	
48 anchor guys	491	
47 stub guys	620	
25 stub and anchor guys	293	
12 arm guys	33	
Total Guys	$2,753	$2,340
Cross Arms		
265 6 pin single cross arms	896	
1176 4 pin single cross arms	3,210	
521 2 pin single cross arms	1,115	
220 6 pin double cross arms	1,533	
738 4 pin double cross arms	4,273	
231 2 pin double cross arms	1,067	
Total Cross Arms	$12,094	$10,280
Miscellaneous Brackets		
270 guard arms	$59	
245 break arms	186	
975 No. 145 single J brackets	341	
430 iron screw pins	56	
118 iron pole brackets	65	
4 6 pin steel arms	18	
390 cob pins	58	
140 wood brackets	24	
Total Miscellaneous Brackets	$807	$686
Total Item XII, Poles and Fixtures	$48,298	$41,053
XIII—Distribution System (Acct No. 123)		
Wire		
26,582 lbs. No. 6 B&S, T. B. W. P. copper	6,645	

	Prices as of Jan. 1, 1922.	
	Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
7,262 lbs. No. 4 B&S, T.B.W.P. copper	1,815	
24,052 lbs. No. 2 B&S, T.B.W.P. copper	6,013	
11,424 lbs. No. 1-0 B&S, T.B.W.P. copper	2,856	
Total Wire	$17,329	$15,596
Insulators		
8244 No. 64 white and brown porcelain	4,782	
628 No. 67 white porcelain	364	
3,202 No. 38 glass	480	
174 Westinghouse Style No. 312993 suspension type	536	
Total Insulators	$6,162	$5,546
Total Item XIII, Distribution System	$23,491	$21,142
XIV—Line Transformers and Devices (Acct. No. 124)		
2200-110-220 Volt Transformers		
3 1 K. W.	$165	
3 1½ K. W.	187	
6 2 K. W.	428	
5 2½ K. W.	363	
23 3 K. W.	1,985	
2 4 K. W.	212	
24 5 K. W.	2,729	
6 7½ K. W.	882	
15 10 K. W.	2,630	
7 15 K. W.	1,560	
1 20 K. W.	268	
1 25 K. W.	332	
2 30 K. W.	785	
6600-110-220 Volt Transformers		
1 30 K. V. A.	429	
3 37½ K. V. A.	1,455	
3 75 K. V. A.	2,212	
Total Line Transformers	$16,822	$14,129
Line Devices		
12 Burke horn gap lightning arresters	33	
27 Garton & Daniels pole type lightning arresters	205	
11 transformer cutouts, 6600 volts	29	
Total Line Devices	$267	$227
Total Item XIV, Line Transformers and Devices	$16,889	$14,356

	Prices as of Jan. 1, 1922.	
	Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
XV—Electric Services (Acct. No.125		
25 3 wire services of No. 6, T.B.W.P. copper wire, 90 ft. average length	$275	
773 2 wire services of No. 6 T. B. W. P. copper wire, 90 ft. average length	5,450	
Total Item XV, Electric Services	$5,725	$5,153
XVI—Electric Meters (Acct No. 126		
Electric Meters on Lines		
110 Volt Single Phase:		
605 5 amp.	5,118	
108 10 amp.	1,069	
14 15 amp.	150	
10 20 amp.	118	
23 25 amp.	300	
18 (30-50) amp.	287	
5 (60-75) amp.	103	
7 (80-100) amp.	158	
1 (120-150) amp.	23	
2 200 amp.	46	
2 300 amp.	47	
Total 110 Volt, Single Phase	$7,419	$6,306
220 Volt, Three Phase		
2 10 amp.	61	
3 15 amp.	96	
7 25 amp.	241	
5 (30-50) amp.	228	
3 (60-75) amp.	157	
2 (80-100) amp.	129	
1 (120-150) amp.	85	
1 300 amp.	89	
1 600 amp.	82	
Total 220 Volt, 3 phase	$1,168	$993
Total Electric Meters on Lines	$8,587	$7,299
Electric Meters in Stores		
110 Volt, Single Phase		
25 5 amp.	$211	
2 10 amp.	20	
3 15 amp.	32	
2 25 amp.	26	
1 50 amp.	16	
1 75 amp.	21	
1 100 amp.	23	
Total 110 Volt, Single Phase	$349	$349

	Prices as of Jan. 1, 1922.	
	Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
220 Volt, Three Phase		
1 5 amp.	28	
1 25 amp.	34	
1 50 amp.	46	
1 75 amp.	52	
Total 220 Volt, Three Phase	$160	$160
Miscellaneous		
23 glass covers	20	
19 metal covers	14	
Total Miscellaneous	$38	$38
Total Electric Meters in Stores	$547	$547
Total Item XVI, Electric Meters	$9,134	$7,846
XVII—Electric Meter Installation (Acct. No. 127)		
820 Meter Installations	$648	
Total Item XVII, Electric Meter Installations	$648	$551
XVIII—Municipal Street Lighting System (Acct. No. 128)		
Brackets and Miscellaneous Material		
353 4 ft. brackets	2,543	
69 7 ft. brackets	757	
144 mast arms	4,028	
11 span suspensions	229	
Total Brackets and Miscellaneous Material	$7,557	$6,424
Lamps and Fixtures		
253 600 c.p. complete with 18 in reflectors and small reflectors	3,279	
169 100-150 c.p. complete with 18 in. reflectors and small reflectors	2,263	
116 250-280 c.p. complete with 20 in. reflectors and small reflectors	1,966	
8 400-600 c.p. complete with 20 in. reflectors and small reflectors	319	
2 600-1000 c. p. complete with 20 in. reflectors and small reflectors	85	
29 General Electric Form 17, 4 amp. luminous arcs Complete with refractor and clear globes	1,140	
Total Lamps and Fixtures	$9,052	$7,694

	Prices as of Jan. 1, 1922.	
	Reproduction Cost New	Reproduction Cost New Less Accrued Depreciation
Wire		
24,140 lbs. of No. 6 T.B.W.P. copper wire	$6,035	$5,432
Total Item XVIII, Municipal Street Lighting System	$22,644	$19,550
XIX—Electric Tools and Implements (Acct. No. 132)		
Miscellaneous tools, etc.	$225	$191
Total Item XIX, Electric Tools and Implements	$225	$191
XX—Electric Laboratory Equipment (Acct. No. 133)		
1 Macbeth illuminometer and miscellaneous equipment	$336	$286
Total Item XX, Electric Laboratory Equipment	$336	$286
XXI—Materials and Supplies (Acct. No. 152)		
431 gross tons of bituminous coal	$2,510	$2,510
Sundry scrap material	198	198
Total Item XXI, Materials and Supplies	$2,708	$2,708

EXHIBIT R—13

HIGH PRESSURE CONST. & SUPPLY CO.

	ELECTRIC CO.			GAS & WATER CO'S.		
	Construction	Gain or Loss		Construction	Gain or Loss	
1915						
1916	$100,366.05	(G)	14,649.44	$97,147.78	(G)	9,701.27
1917	34,091.88	(G)	1,047.70	39,845.34	(G)	4,885.01
1918	33,751.75	(G)	1,548.28	19,541.80	(L)	11,119.27
1919	32,703.29	(L)	4,625.43	8,333.22	(L)	2,862.39
1920	14,929.94	(L)	777.36	33,559.68	(G)	8,933.19
1921	34,290.58	(G)	1,209.13	45,138.22	(G)	1,055.72
Total	250,133.49			227,366.04		
	Net	(G)	13,051.28	Net	(G)	8,593.53

EXHIBIT R—14

MILLVILLE ELECTRIC LIGHT COMPANY

BILLS PAYABLE

On 12-31-20 Bills Pay. Amounted to			$243,767.26
Comprising Notes issued:			
To H. P. C. & S. Co. 137 notes for construction (Endorsed to Walter Wood)	$197,100.00		
To Walter Wood (3 notes) for interest	44,667.26		
To Ellison Elmer (1 note) for Land	2,000.00		
Total 12-31-20		$243,767.26	
As of 1-3-21 and upon suggestion of the Utilty Commission indebtedness between the Utility Companies was paid and the Electric Light Co. notes reduced by			14,311.41
New notes were issued to Walter Wood in place of the bal. standing to High Pressure Cons. & Sup. Co., making the bal. of bills Payable Acct.			
As Follows			
Total 1-3-21			$229,455.85
To Walter Wood (Construction)	$182,788.59		
(13 Notes) Interest	44,667.26	$227,455.85	
To Ellison Elmer (1 note)		2,000.00	
		229,455.85	
In 1921 additional notes to Walter Wood			
Interest	14,843.67		
On account of operating losses	33,100.00		47,943.67
Total 12-31-21			277,399.52

RECAPITULATIO

To Walter Wood-Construction	$182,788.59		
Interest	59,510.93		
Acct. of Operating Losses	33,100.00	275,399.52	
To Ellison Elmer		2,000.00	
		277,399.52	

10-4-22

EXHIBIT R—9

MILLVILLE ELECTRIC LIGHT COMPANY

COMPARISON OF OUTPUT, SALES, PRODUCTION COSTS AND UNIT COSTS—YEARS 1921 AND 1922

Year	1921	1922
K. W. H. Generated at Hydro Plant	533,995	538,640
K. W. H. Purchased	867,660	145,350
K. W. H. Generated at Steam Plant	657,200	1,643,010
Total K. W. H. Produced	2,058,855	2,327,000
K. W. H. Sold	1,562,960	1,516,868
Cost of Hydro Production	$8,040	$8,347
Cost of Purchased Energy	26,180	4,509
Cost of Steam Generation—Gross	65,536	71,747
Credit Steam to Gas Department	27,717	31,161
Net Cost of Steam Generation	37,819	40,586
Total Net Cost of Production	72,037	53,442
Cost per K. W. H. Hydro	$0.0151	$0.0155
Cost per K. W. H. Purchased	0.0302	0.0310
Cost per K. W. H. Steam (Gross)	0.0997	0.0437
Cost per K. W. H. Steam (Net)	0.0575	0.0247
Net Cost per K. W. H. Produced	0.0350	0.0230
Net Cost of production per K. W. H. Sold	0.0461	0.0352

P. O. 1814

10-20-22

EXHIBIT R—5

Cost on M. E. L. Co. Switchboard of current purchased from the Millville Mfg. Co. during December, 1922.

Current from M. Mfg. Co. measured on M. Mfg. Co. Switchboard		135,700 K.W.
Current from M. Mfg Co. measured on M. E. L. Co. Switchboard		125,400 K.W.
Difference or Loss		10,300 K.W.
M. Mfg. Co. charge for current	$4,083.50	
M. Mfg. Co. charge for current per K.W.		.032533
Boiler Room Fixed charge per month	$1,030.23	
Engine Room Fixed Charge per month	517.84	
Total	$1,548.07	
Fixed charge per month per K.W.		.012345
Supt. wages for month	$83.81	
Supt. wages per month per K.W.		.000668
Total cost per K.W. on Switchboard		.045576

EXHIBIT R—4 AND R—19

Comparison of cost of current for November, 1922, on switchboard—Purchased Bleachery current compared with current generated by Steam Plant. Steam Plant considered shut down while taking current from Bleachery.

Total current generated by steam plant	164,700 K. W.
Current used by Auxiliaries steam plant	38,346 K.W.
Net current available for sale steam plant	126,354 K.W.
Line and Transformer losses between Bleachery and Hydro Plant—10.9%	13,775 K.W.
Total current to be purchased from Bleachery to have 126354 K. W. available for sale	140,109 K.W.

STEAM PLANT		BLEACHERY	
Cost of current available for sales. Plant in full operation and furnishing steam to Gas Company.		Cost of current available for sale. Steam Plant shut down. Bleachery charge 3c per K.W. plus a monthly fixed charge of $12.50.	
Coal cost per K.W.	.02111		
BR Labor per K.W.	.00315	Chg. by Bleach. per K.W.	.03336
BF Pump per K.W.	.00154		
Eng. Rm. Labor per K.W.	.0036		
Oil per K. W.	.00028		
BR fixed Chg. per K.W.	.00513	BR fix. chg. per K.W.	.00813
Eng. Rm. fix chg. per K.W.	.00409	Eng. rm. fix. chg. per k.w.	.00409
Cost per K.W. on Swbd.	.0389	Cost per K.W. on Swbd.	.04558

NOTE: The Boiler Room (BR) and Engine Room fixed charges represent Interest, Taxes, Insurance, etc., on the Steam Plant and are practically the same with Plant shut down.

The Boiler Room fixed charge per K.W. for the steam plant is less than the same item for the Bleachery, because a per cent. of the "BR fixed charge" is placed in the cost of steam sold to the C. C. Gas Co., reducing this particular item of cost charged to current generated.

12-6-22

WCB:RQ

September 26, 1923.

In re: Millville Electric Light rates.

A. N. Barber, Esq.,
State House,
Trenton, N. J.

Dear Mr. Barber:

Am enclosing herewith schedule of rates, filed in accordance with the determination of the Board. These rates will be made effective in the bills which are rendered covering service for September. In other words, they will take effect as of the 1st of September.

The schedule is filed without prejudice to the determination of any question involved in the certiorari proceedings instituted by the writ of certiorari, which was mailed you yesterday.

Very truly yours,

LEWIS STARR.

LS|L

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COMPARATIVE ELECTRIC DATA FOR 1922

	Millville	Bridgeton	Vineland	Wildwood	CapeMay	Hammonton
Street Lights	323,899	233,551	191,493	281,400	206,200	92,130
Commercial	423,093	703,974	350,230	909,093	361,175	235,225
Power	781,552	3,943,040 Estd.	1,412,782	160,428	74,986	218,079
Total Sold	1,530,047	5,203,322	2,454,505	1,350,921	676,711	545,434
Company Use	428,252	Estd.				
Line Losses	343,977					
Lower Water Allowance	53,432					
Total	825.661	2.125.000	936.295	670,567	340,377	119,878
Total Generated Gross	2,355,708	7,328,300	3,390.800	2,021,488	1,032,588	665,312
Percent. Losses:				Aver.		
Company Use	18.6%	29%	27.6%	21.75%	30%	16.69%
Line Losses	52 %					
Cost Per K. W. on Switchboard	.0385	Estd. .019	.0131	X	.0518	X
Meters in Service	1200	1759	2672	Max. 4100 Min. 2000	Max. 1394 Min. 984	700

NOTE: Bridgeton Co. purchased for entire district 18,656,000 K. W. and losses were 5,551,000 K. W. over 42%.

NOTE: Wildwood Co. use and losses includes 347,500 K. W. DC trolley. Total sold does not include DC current for trolley.

R 12

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HIGH PRESSURE CONSTRUCTION & SUPPLY CO.

CONSTRUCTION WORK FOR UTILITY COMPANIES ANNUALLY

Year	GAS CO. Amt	P.C.	WATER CO. Amt.	P.C.	ELECTRIC CO. Amt.	P.C.	TOTAL CONST. Amt.	P.C.
1915-1916	77,888.78	—39.3	19,461.00	— 9.9	100,366.05	—50.8	197,513.63	—100.
1917	28,808.24	—43.2	3,839.10	— 5.7	34 091.88	—51 1	66,737.22	—100.
1918	17,166.40	—32.2	2,375.48	— 4.4	33,751.75	—63.4	53,293.55	—100.
1919	6,436.72	—15.3	3,906.50	— 6 9	32,703.29	—77.8	42,036.51	—100.
1920	20,206.94	—52.5	3,352.73	— 8.9	33,929.94	—38 8	36,489.63	—100.
1921	36,151.35	—45.5	8,985.97	—11.3	34,290.58	—43.2	79 428.60	—100.
	188,444.33	—32.0	40,931.71	— 8.6	350,133.49	—59.4	477.499.53	—100.

1-22-22-C.

BUSINESS DONE ANNUALLY

	TOTAL CONST. Amt.	P.C.	OTHER BUSINESS Amt.	P.C.	TOTAL Amt.	P.C.
1915-1916	197,513.83	—100.	31,576.23	— 9 9	219,090.06	—100.
1917	66,737.33	—100.	17,049.93	—20.3	83,787.15	—100.
1918	53,393.55	—100.	7,662.48	—13.0	60,956.03	—100.
1919	42,036.61	—100.	9,819.39	—13.9	51,855.90	—100.
1920	38 432.62	—100.	32,348.77	—36.7	60,836.39	—100.
1921	79,438.90	—100.	19,819.46	—19.2	98,248.36	—100.
	477,499.33	—100.	97,274.36	—16.9	574 773.79	—100.

1-22-22—C

EX. R 15

MILLVILLE ELECTRIC LIGHT COMPANY

MUNICIPAL LIGHTING OPERATION

2 Months 1921

Revenue:		
Arc. 43,289 K. W.	$2,131.53	
Inc. 276,580	13,805.78	
Arc. 319,869	15,937.31	
Less Suspense Rev. (9 mo. approx. $440.00 per mo.)	3,960.00	$11,977.31
Utilization Exp:		
Mun. St. Arc Lp. Operation	435.50	
" " " " Repairs	160.02	
Mun. St. Inc. Lp. Operation	3,963.78	
" " " " Repairs	444.77	
Repairs Municipal Lines (Est.)	1,600.00	
	6,604.07	
Interest on Investment (6% $19,314.31)	1,158.86	7,762.93
Revenue Without Taxes & Overhead & Production		$ 4,214.38
Revenue per K. W.		.0132

* * * * * * * * *

12 Months 1922

Revenue:		
Arc. 41,949 K. W.	$1,592.39	
Inc. 291,350	10,780.98	12,373.37
333,299		
Utilization Exp:		
Mun. St. Arc Lp. Operation	589.35	
" " " " Repairs	212.54	
Mun. St. Inc. Lp. Operation	4,376.51	
" " " " Repairs	505.17	
Rep. Lines Municipal A. C.	1,539.13	
" " " D. C.	176.11	
	7,455.81	
Interest on Investment (6% $20,919.87)	1,255.19	8,711.00
Revenue Without Taxes & Overhead & Production		$ 3,662.37
Revenue per K. W.		.0113

2-9-22 C.

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WRIT

Filed Dec. 10, 1923.

NEW JERSEY: ss.

(Seal) The State of New Jersey, to the Board of Public Utility Commissioner of the State of New Jersey, GREETING:

We, being willing for certain reasons, to be certified of a certain order by you lately made, dated the 29th day of October, 1923, in proceedings initiated by you in the matter of the investigation of the rates of the Millville Electric Light Company, do hereby command you that you send, under your seal, to our Justices of the Supreme Court of Judicature, at Trenton, on the tenth day of December, 1923, as well the order aforesaid as the opinion, conclusion, findings, proceedings, proofs and exhibits made and taken before you, with all things touching and concerning the same, as full and entirely as they remain in your hands or hand or control, in the matter of the proceedings initiated by you respecting an investigation of the rates of the Millville Electric Light Company, together with this our writ, that we may further cause to be done thereupon what of right we shall see fit to be done.

Witness, William S. Gummere, Chief Justice of our Supreme Court at Trenton, this twentieth day of November, 1923.

EDWARD J. KELLEHER,
Clerk.

LEWIS STARR,
Attorney.

NEW JERSEY SUPREME COURT.

THE STATE, MILLVILLE ELECTRIC LIGHT COMPANY,

Prosecutor,

vs

BOARD OF PUBLIC UTILITY COMMISSIONERS OF THE STATE OF NEW JERSEY,

Respondent.

WRIT OF CERTIORARI.
Returnable Dec. 10, 1923.

LOUIS STARR,
Atty. of Prosecutor,
4th & Market Sts., Camden, N. J.

This writ is allowed, let it be sealed.

Dec. 20, 1923.

CHAS. C. BLACK,
Justice of the Supreme Court.

RETURN OF WRIT

Filed Dec. 10, 1923.

NEW JERSEY SUPREME COURT.

MILLVILLE ELECTRIC LIGHT COMPANY, Prosecutors, vs BOARD OF PUBLIC UTILITY COMMISSIONERS, Defendant.	ON CERTIORARI RETURN OF WRIT

To the Honorable the Justices of the Supreme Court of Judicature of New Jersey.

The Board of Public Utility Commissioners herewith sends to the Supreme Court of Judicature of the State of New Jersey a certain Decision and Order made by said Board the Twenty-ninth day of October, Nineteen Hundred and Twenty-three, together with all the proceedings and matters touching and concerning the same, as fully and entirely as before said Board they remain, as it is within commanded.

IN WITNESS WHEREOF the seal of said Board is there affixed, and certified by the subscriber.

SEAL

ALFRED N. BARBER,
Secretary of the Board of Public Utility Commissioners of New Jersey.

(Filed Dec. 10, 1923)
EDWARD J. KELLEHER,
Clerk.

PETITION FOR RATES

Filed October 25, 1920.

To the Board of Public Utility Commissioners of the State of New Jersey:

Your petitioner, Millville Electric Light Company, by this amended petition, shows:

1. That it is a corporation organized and existing under the laws of the State of New Jersey.

2. It's corporate title is Millville Electric Light Company.

3. Your petitioner was organized under the general corporation act of the State of New Jersey by certificate filed in the office of the Secretary of State on January 28th, 1892.

4. The value of the fixed capital of your petitioner, used and useful, based upon cost as of June 30, 1920, is $302,368.75, as shown by petitioner's books, and the present value of the plant based upon actual cost to reproduce at present prices is at least $377,000.00, to which is to be added a proper proportion of taxes paid during construction, to wit: $1,500.00, and a proper proportion of interest paid during construction of approximately $8,300.00.

5. Your petitioner has its principal office at 233 High Street, Millville, Cumberland County, New Jersey, and the business conducted by it is the generation and distribution of electric current for light, heat and power in the City of Millville, Cumberland County, aforesaid.

6. The rates now charged for electric current generated and furnished are as follows:

will be one and one-half times the average power rate for the same month.

10 20 30

MILLVILLE ELECTRIC LIGHT COMPANY

LIGHTING RATES

SCHEDULE A—Residential, Office, Professional and Club Lighting—All Year Monthly Basis.

For first	30	K. W., or less,	15c	per	K.W.	Discount,	3c	per	K. W.	Net 12c	per K. W.
Over	30	" all at	13c	"	"	"	3c	"	"	" 10c	" "

Minimum Charge, $1.10 Gross. Net, $1.00 Per Month.

SCHEDULE B—Store and Commercial Lighting Including Churches—All Year Monthly Basis.

For first	100	K. W., or less,	11c	per	K. W.	Discount,	1c	per	K. W.	Net 10c	per K. W.
Over 100 and up to	500	" all at	10½c	"	"	"	1c	"	"	" 9½c	" "
Over	500	" "	10c	"	"	"	1c	"	"	" 9c	" "

Minimum Charge, $1.10 Gross. Net, $1.00 Per Month.

SCHEDULE C—Transient Lighting—Monthly Basis.

For first	100	K. W., or less,	15c	per	K. W.	Discount,	1c	per	K. W.	Net 14c	per K. W.
Over 100 and up to	500	" all at	14c	"	"	"	1c	"	"	" 13c	" "
Over	500	" "	13c	"	"	"	1c	"	"	" 12c	" "

Minimum Charge, $2.20 Gross. Net, $2.00 Per Month.

SCHEDULE D—Sign Lighting. Average Lighting three (3) Hours or More Each Week Night. Monthly Basis.

For the first	100	K. W., or less, per month	8c	per	K. W.	Disc.	1c	per	K. W.	Net 7c	per K. W.
Over	100	" per month all at	7c	"	"	"	1c	"	"	" 6c	" "

Minimum charge, $1.10 gross. Net $1.00 Per Month.

SCHEDULE E—Industrial Lighting Rates—Monthly Basis.

When industrial lighting is used in connection with electric power under Schedule AP, the lighting rate will be one and one-half times the average power rate for the same month.

January 1st, 1918

MILLVILLE ELECTRIC LIGHT COMPANY

POWER RATES

Monthly Basis

SCHEDULE AP.

For	the	First	250	K. W.	.075	per	K. W.
"	"	next	250	"	.065	"	"
"	"	"	1000	"	.055	"	"
"	"	"	1500	"	.045	"	"
"	"	"	2000	"	.035	"	"
"	"	"	5000	"	.025	"	"
"	"	"	1000	"	.024	"	"
"	"	"	1000	"	.023	"	"
"	"	"	1000	"	.022	"	"
"	"	"	1000	"	.021	"	"
"	"	"	1000	"	.02	"	"
"	"	"	1000	"	.015	"	"
"	"	"	1000	"	.015	"	"
"	"	"	1000	"	.015	"	"
"	"	"	1000	"	.015	"	"
"	"	"	1000	"	.015	"	"

For all current over 20,000 K. W. hours per month, the net charge will be .025 per K. W.

A minimum charge of one ($1.00) dollar per month, per Horsepower of connected load will be made for Fifty (50) Horsepower or less. For all connected load over 50 Horsepower a minimum charge of fifty (50) cents per month, per Horsepower will be made; provided that the amount of current is not registered on the meter.

NOTE—Increase of one-half cent per K. W. hour from January First, 1918, has been authorized by the Board of Public Utility Commissioners.

SCHEDULE E.

Industrial Lighting Rates—Monthly Basis.

When industrial lighting is used in connection with electric power under schedule AP, the lighting rate will be one and one-half times the average power rate for the same month.

which rates became effective as of January 1st, 1917, and the power rate January 1st, 1918, pursuant to schedules filed with your Honorable Board.

7. Based upon said rates, the total operating and non-operating revenue of your petitioner for the year ending December 31st, 1919, was $56,259.87, which represented a return per kilowatt of $.049. The total cost of operation, including taxes, interest paid on an indebtedness, as of December 31, 1919 of about $245,000.00, amortization and all operating and non-operating expenses, without the payment of any dividend and without taking into consideration interest on the excess of capital invested over the amount of indebtedness during the same period was $63,061.92, which represents $.055 per kilowatt of current sold.

8. Based upon the said rates, the total operating and non-operating revenue of your petitioner for the six months of 1920, ending June 30th, was $51,516.41, and represented a rate per kilowatt of current sold of $.051.

9. The total cost of operation, including taxes paid and interest paid on the aforesaid indebtedness of $245,000.00, amortization and all operating and non-operating expenses, without the payment of any dividend and without return upon the capital invested in excess of $245,000.00, on which interest was paid during the same period, amounted to the sum of $72,252.53, making a total net corporate loss during said period of the first six months' operation during 1920, of $20,736.12, which represents $.02 per kilowatt of current sold.

10. Attached hereto and marked Exhibit 1 A is a statement of operation and income for twelve months ending December 31, 1919; attached hereto and marked Exhibit 1 B is a statement showing operating expenses for twelve months ending December 31, 1919; attached hereto and marked Ex-

hibit 1 C is a statement showing the operation and income for six months ending June 30, 1920, and attached hereto and marked Exhibit 1 D is a statement showing operating expenses for six months ending June 30, 1920.

11. Attached hereto and marked Exhibit 2 A is a comparative statement of operation and income for twelve months ending December 31, for each of the years 1917, 1918 and 1919; attached hereto and marked Exhibit 2 B is a comparative statement showing operating expense for the twelve months ending December 31, for each of the years 1917, 1918 and 1919; attached hereto and marked Exhibit 2 C is a comparative statement of operation and income for six months ending June 30, for each of the years 1918, 1919 and 1920; and attached hereto and marked Exhibit 2 D is a statement showing operating expense for the six months ending June 30, for each of the years 1918, 1919 and 1920.

12. Attached hereto and marked Exhibit 3 is a copy of the balance sheet of petitioner as of December 31st, 1919, which shows the assets of petitioner, its funded debt, its outstanding obligations, and amount of capital stock, which exhibit also shows similar balance sheets of petitioner for the years ending December 31st in each of the years 1917 and 1918.

13. Attached hereto is a copy of the balance sheet of petitioner as of January 1st, 1920, above referred to, and also a similar balance sheet as of June 30, 1920, which statements are marked together as Exhibit 4.

14. Attached hereto is a statement of an estimate of the cost of operation for the full year of 1920 and operating and non-operating revenue at present rates, based upon actual conditions for the first six months of the year and based upon an approximation of the revenue and expenses for the

balance of the year, according to existing rates, which statement is made part hereof, and marked Exhibit 5; 5 A being a statement of estimated revenue and 5 B being a statement of estimated expenses. The increased cost of labor, coal, supplies and taxes contained in such statements is based upon prices as of August 1st, 1920.

15. Attached hereto and marked Exhibit 5 C is a statement of operation and income for the months of July and August, 1920.

16. Your petitioner is of the opinion that in order to produce sufficient revenue hereafter, to pay operating expenses based upon present prices of labor and materials, without giving any return on the capital invested in excess of interest at six per cent. on floating indebtedness, it would be necessary for your petitioner to receive for each kilowatt of current sold an average of $. , and the rates be increased in accordance with the schedule attached hereto and marked Exhibit 6.

17. The corporate loss of your petitioner's business for the fiscal year of 1918 was $9,683.69, during the fiscal year 1919 was $6,802.05, during the first six months of 1920 was $20,736.12, during the month of July, 1920 was $8,684.60 and during the month of August was $8,537.34.

18. Attached hereto are comparative statements of operation and income for the months of July and August, 1919 and 1920, which statements are marked Exhibit 5 C.

19. The necessity for making this application is based upon the following facts:

The existing rates were never predicated upon a sufficient return for the amount of capital invested except in the early history of the Company, when the amount of such invested capital was less than $100,000.00. There has been a substantial increase in the cost of fuel, labor and all other ele-

ments which enter into the generation and sale of electric current. The cost of materials which has entered into the construction of additions to plant and lines has increased approximately one hundred per cent. Taxes, both local and franchise, have materially increased over the amounts paid when the present rates were established.

20. Attached hereto is a statement of an estimate of the cost of operation for a full year, and operating and non-operating revenue during the same period at the rates schedule of which is attached hereto, based upon actual conditions during the months of July and August of this year, with a deduction for the difference between the present price of coal and the price which was paid by your petitioner in the month of August which statement is marked Exhibit 7.

21. Your petitioner therefore files the schedule of proposed rates set forth in Exhibit 6, attached hereto, to become effective as of November 1st, 1920.

Your petitioner therefore prays,

1. That the schedule of rates as shown by Exhibit 6, attached hereto, be approved, to become effective as of November 1st, 1920.

2. If your Board be of the opinion that the rates, approval of which is requested hereby, be not acceptable, then that your Board shall fix and determine such just and reasonable rates as may be requisite and necessary to furnish your petitioner additional revenue in order that the business of your petitioner may not be conducted at a loss, and that said rates shall be sufficient to produce adequate revenue to cover operating expenses and provide a return upon the capital invested and replace losses sustained in the past, and sufficient to make it possible for the securities of the Company to be sold in order to complete plant construction.

3. That your petitioner may have such other and further relief as may be requisite and necessary.

MILLVILLE ELECTRIC LIGHT COMPANY.
By S. J. FRANKLIN,
General Manager.

STATE OF NEW JERSEY
COUNTY OF CUMBERLAND } ss

S. J. Franklin, of full age, being duly sworn according to law on his oath, deposes and says:

I am the General Manager of the Millville Electric Light Company, the petitioner named in the foregoing petition. The matters and things contained therein are true to the best of my knowledge, information and belief.

Subscribed and sworn to before me this 21st day of October, 1920.

(Signed)
S. J. FRANKLIN.

(Signed) GEORGE HERING,
Notary Public of New Jersey.
Commission expires March 1, 1923.

LETTER TO BOARD

February 23rd, 1921.

A. N. Barber, Secretary,
Board of Public Utility Commissioners,
Trenton, New Jersey.
Dear Sir:—

As the Millville Electric Light Company has been losing money during the whole year of 1920, and in very large amounts since June, being around $8,000 per month, until December, which was over $4,500 loss, and as there is no Public Utility Commission functioning and also owing to the fact that the time since our application for rates was suspended has expired, we have concluded, upon legal advice, to protect ourselves from greater losses by putting the following attached schedule for Lighting and Power into effect, from the time of reading the meters on the last of February, 1921.

Electric Light Consumers

TAKE NOTICE

The Millville Electric Light Company petitioned the State Public Utility Commission last November for the following rates (as shown below) to cover increases of cost in the production and distribution of electric current.

The Commission suspended their adoption (or secured our promise to do so) of the rates for three months. This time having elapsed, the rates will now be put in force from the dates of the meter readings on the last of February.

So that all customers shall be treated with entire fairness, and not suffer any loss from the suspension of the Public Utility Commission, by the late action of the Governor, the Electric Light Company will, upon the payment of all bills, give the customer a receipt, guaranteeing to abide by the decision of the new Board, and if such calls for a rebate upon the payments already made, the Company will, upon the presentation of said receipt, promptly make any refund such decision shall call for or require.

We consider this proposition fair and reasonable to all interested parties.

LIGHTING RATES

SCHEDULE-A.

Residential, Office, Professional and Club Lighting—All year, monthly basis.

For first 30 KW. or less, 19c per KW. Discount, 3c per KW. Net 16c per KW.

All over 30 KW. 17c per KW. Discount 3c per KW. Net 14c per KW.

Minimum Charge, $1.10 gross, Net, $1.00 per month.

SCHEDULE-B.

Store, Mercantile and Church Lighting—All Year, monthly basis.

For first 100 KW. or less, 15c per KW. Discount 1c per KW. Net 14c per KW.

All over 100 and up to 500 KW., 14½c per KW. Discount 1c per KW. Net 13½c per KW.

All over 500 KW. 14c per KW. Discount, 1c per KW. Net 13c per KW.

Minimum Charge, $1.10 gross, Net, $1.00 per month.

SCHEDULE-C.

Transient Lighting—monthly basis.

20c per KW. Discount, 2c per KW. Net 18c per KW.

Minimum Charge, $2.20 gross, Net, 2.00 per month.

SCHEDULE-D.

Sign Lighting—monthly basis.

12c per KW. Discount 2c per KW. Net 10c per KW.

Minimum Charge, $1.10 gross, Net, $1.00 per month.

SCHEDULE-E.

Industrial Lighting—monthly basis.

When industrial lighting is used in connection with electric power under Schedule AP, the lighting rate will be one and one-half times the average power rate for the same month.

POWER RATES
Monthly Basis

SCHEDULE-AP.

For the first		250	K. W.	.10	per K.	W.
For the next		250	"	.09	" "	
" "	"	1000	"	.08	" "	
" "	"	1500	"	.07	" "	
" "	"	2000	"	.06	" "	
" "	"	5000	"	.055	" "	
" "	"	5000	"	.05	" "	
" "	"	5000	"	.045	" "	

For all current over 20,000 KW. hours per month, the net charge will be .055 per KW.

A minimum charge of one ($1.00) dollar per month per Horsepower of connected load will be made for Fifty (50) Horsepower or less. For all connected load over 50 Horsepower a minimum charge of fifty (50) cents per month, per Horsepower will be made; provided that that amount of current is not registered on the meter. 2-21-7t

MILLVILLE ELECTRIC LIGHT CO.

You will also please note that we explain in this notice that we propose to give a rebate coupon to each consumer paying their bill, so that providing our rates, as finally agreed upon, is considered exorbitant, it is so arranged that they will receive a refund according to the direction of a new Utility Commission, when it is functioning.

And with these explanations, we desire to place this rate on file in your office.

Very truly yours,

MILLVILLE ELECTRIC LIGHT COMPANY.

By S. J. FRANKLIN,
General Manager.

DECISION OF BOARD

STATE OF NEW JERSEY

BOARD OF PUBLIC UTILITY COMMISSIONERS

IN THE MATTER OF THE INVESTIGATION OF THE RATES OF THE MILLVILLE ELECTRIC LIGHT COMPANY. } DECISION

LEWIS STARR for the Company.
LOUIS H. MILLER for the City of Millville.

The petitioner in this matter filed, on August 20th, 1920, an application for an increase in rates averaging 55 per cent. On October 25th, 1920, the company filed an amended application providing for a material increase over and above the increase first proposed. Under the latest schedule proposed by the company, it was estimated that the gross revenue would be increased about 109 per cent. over that received during the previous year.

Hearings were begun on October 26th, 1920. Before the matter was concluded, however, the Supreme Court decided that the ouster of the Commission (as then constituted) by an order of the Governor was legal. A new Board was appointed in the spring of 1921. The company in the interim put into effect a schedule of increased rates. The present proceedings were instituted by this Board to determine the reasonableness of the rates thus made effective. The testimony and exhibits are vo-

luminous and, to a large extent, contradictory, and have required most careful study and analysis.

A technical description and criticism of the two plants of the respondent will be found in Appendix "A," attached hereto.

For several years past the Millville Manufacturing Company, whose plant is located adjacent to the plant of the Millville Electric Light Company, has supplied additional electrical energy required to meet the demands of the electric light company's customers.

The distribution of electrical energy for use throughout the City of Millville, with the exception of certain power customers supplied from a tie line between the two plants, is effected by means of a switchboard located at the hydro-electric plant. This switchboard is conveniently arranged with double throw switches in such a manner as to make it possible to carry any distribution circuit on any source of power, and in this way make available the complete capacity of the power from the hydro-electric plant.

It is in evidence in the case (testimony p. 440 and Exhibits R-6 and P-16) that a large part of the energy reported as sold for power has been used in the operation of the Millville Water Company. During the time referred to, the water power belonging to the water company does not appear to have been in use for its own proper purposes. The water company has a prior right to 50 horsepower of hydraulic power. Secondary to the water company the electric company has a right to 150 horsepower of hydraulic power. These rights were purchased from the Millville Manufacturing Company. The practice has been for the Millville Manufacturing Company to utilize all of the water power when needed and to furnish the water company and the electric com-

pany respectively the equivalent in electric energy without charge.

Valuation.

With reference to the value of this property, we have testimony and exhibits submitted by Day & Zimmerman as to values in 1922 and 1923. We have also testimony and exhibits submitted by W. E. S. Temple, for the City of Millville, and corrected book costs by the Board's Engineer.

Toward the close of the hearings in this case it was deemed wise to authorize the holding of informal conferences between the engineers representing the municipality, the company, and the Commission, with a view to reaching an agreement on as many points as possible.

It was agreed by the conferes that the inventories as given in Exhibit R-11, with a few minor exceptions, and as affected by the changes for the year 1922, should be taken as the inventory of the property to be considered in this case. There was no agreement as to how much of this property could be considered as used or useful, the principal differences being the inclusion or exclusion of the steam plant as a whole and the property at the hydro-electric plant used jointly or entirely for the purposes of the water company. With respect to the property which is jointly or entirely used for other than electric utility purposes, the Board considers it advisable to exclude the same entirely from the used and useful property rather than include it and then include in the income a sufficient rental to pay the carrying charges on the property. The same allocation will be used as was submitted by the engineer for the municipality in the engineer's conferences and as is given in Exhibit P-31, to which allocation no particular criticism was made by the company's engineers.

Value of Steam Plant not to be included in Rate Base.

The record shows that the cost of operating the steam plant as constructed by the respondent has, during the last three years, entailed operating expenses and taxes, without any return on the value of the steam plant, aggregating upwards of $70,000 in excess of the cost of current if purchased from the Millville Manufacturing Company, which, as has been above stated, has supplied the respondent with current required by it for some years.

The cost of current generated in this steam plant, due to poor load factor, installation of obsolete machinery, with excessive maintenance charges, as well as duplicated labor costs consequent upon the operation of two small plants located at a considerable distance apart in a single city, has largely exceeded the cost of current purchased from the Millville Manufacturing Company.

In view of the facts in the case, the Board cannot consider as controlling the costs of operating the steam plant, which are in excess of what the same current output would cost if purchased from outside sources. In making its estimates hereinafter, the Board will therefore consider that all current not generated in the hydro-electric plant will be purchased at a price shown by the company's witnesses in Exhibit R-8 and all costs relating to the construction and operation of the steam plant will be eliminated from further consideration herein.

Value of Property Used and Useful.

In Appendix "B" is set up a summary of the values as claimed (1) by the plaintiff in this case, (2) by the respondent company, and (3) as found by the Board after a careful consideration of the facts. Appendix "B" shows on a comparative basis the value of the hydro-electric plant, the distribution system as allocated to municipal street lighting,

and to commercial power and light, and general items of property, working capital and intangible values. The Board finds the present or depreciated value of these items of used and useful property to be $193,506 as of December 31st, 1922. To this the following items are added:

(a) The estimated net additions to plant and property up to June 30, 1923 are estimated as $10,000, from which is deducted an estimated increase in the reserve for accrued depreciation of $3,000, leaving a net addition of $7,000 for this item.

(b) In order to increase the efficiency and output of the hydro-electric plant, the Board allows an estimated cost of $5,000 for installing the equipment which will bring about this desirable change. This $5,000 added to the $7,000 included in item (a) makes a total of $12,000 to be added to the $193,506 above recited, making a total of $205,506 which the Board would round out to $206,000 on a basis for rates in this proceeding.

Annual Depreciation.

Inasmuch as it is indicated that replacements of property in the hydro-electric plant should be made immediately, the cost of which, less accrued depreciation, approximates $2,500, the Board will assume this to be written off in five installments of $500 each for a period of five years next ensuing. The depreciation in other plant and property will, in the opinion of the Board, aggregate approximately $5,800, making a total charge to operating expenses for amortization of fixed capital (depreciation) of $8,300.

Estimated Sales of Current During the Year.

The estimated costs of operating the hydro-electric plant and purchasing current have been set up on behalf of the company for the year 1922 in Exhibit R-8, and on behalf of the plaintiff, as adjusted

to what, in the opinion of the City's expert, would be required under efficient and economical conditions, in Exhibit P-31, with supporting testimony shown in the record. These two exhibits are summarized for purposes of comparison in Table I, which follows.

TABLE I.

ESTIMATED RESULTS OF OPERATION OF THE MILLVILLE ELECTRIC LIGHT COMPANY, EXCLUDING ENTIRELY THE STEAM PLANT OF THE RESPONDENT ON SEVERAL BASES.

	Estimate R-8 Year 1922		Estimate P-31 Year 1923	
			Pg. 55	Pg. 57
Municipal Street Lighting	kw. hrs.		kw. hrs.	
Arcs	41,949	$ 1,592	41,354	$11,595
Incandescent	281,950	10 781	211,834	11,784
Total	323,899	12,373	253,188	13,379
Commercial				
Metered Lighting	423,093	63,734	560,000	51,800
Metered Power	781,552	47,498	300,000	14,040
Flat-rate Lighting	1,503	303		
Total	1,206,148	111,535	860,000	65,840
Total Sales Current	1,530,047	123,908	1,113,188	79,219
Company use	21,500		17,134	
Unaccounted for	371,409		169,878	
T'tl to be generated	1,922 956		1,300,000	
Miscellaneous Sales		121		
Total Revenue		124,029		79,219
Hydro-electric generation	642,690		875,000	
Power purchased	1,280,266		425,000	
OPERATING DEDUCTIONS				
Hydro-electric Production				P-31, p. 52
Labor		5,226		4,800
Supplies, Expense, Lubricants		1,874		600
Repairs Station Bldg.		576		150
Repairs Hydraulic Equip.		193		350
Repairs Electric Station		1,212		200
Repairs Macls. Station				

TABLE I.—(Con).

Total Hydro- electric Production	642,690	9,081	875,000	6,100
Steam Plant Production		2,400		
Total Hydro & Steam Exp.		11,481		6,100
Current Purchased and kw. hrs.	1,280,206	34,237	425,000	11,348
Total Production Exp.		45,718		17,448
Distribution Expense		6,285		6,000
Munic. St. Lighting—Arcs		978		472
Munic. St. Lighting—Incan.		6,478		2,831
Munic. St. Lighting—Total		7,456		3,303
Commercial Administration		679		680
Business Promotion		197		200
G. O. Sal., Sup., & Exp.		8,097		5,600
General Line Expense		6,454		
Macls. General Expense		625		
Insurance		2,792		
Injuries & Damages		28		1,400
Stationery & Printing		555		
Store & Garage Exp.		26		
Macls. Adjustments		(260*)		
General Amortization		11,697		4 200
Total Gen. & Miscel.		30,014		11,200
Taxes —		9,132		?
Uncollectable Bills		37		?
Total Deductions		99,517**		38,831
Net Operating Revenue		24,512		?

*In red

**Correct addition, $99,518

Municipal Street Lighting.

Great differences of opinion were developed at the hearing with respect to the amount of current required for municipal street lighting. A contract was entered into between the City of Millville and the respondent in 1915, covering specifications and prices for various classes of street lighting equipment. At the expiration of this contract the City of Millville refused to pay more than the unit prices set forth in the aforesaid contract. Mr. Franklin testified that he has repeatedly sought to have executed a new contract involving an increase of about 12 per cent. over the street lighting rates now provided for in the 1915 contract, but without success. On the other hand, the expert for the city of Millville claims that street lights of larger capacity than required in the specifications contained in the 1915 contract have been installed by the company, thereby greatly increasing the amount of current over that needed to furnish the lights specified. A statement furnished on behalf of the company confirms in large part this allegation. Counsel for the City of Millville, however, states that his client is willing to abide by the specifications in the original contract and the Board will therefore assume that the current to operate the street lighting system will be that shown in Exhibit P-31 on page 51 (including the new lamps to be added as shown by the expert of the City). This consumption is 253,218 kilowatt hours. If the company desires for its own purposes to install larger lights than required by the contract, it should assume the cost of the larger amount of current needed to supply the same. If, on the other hand, it should put in the identical equipment required by the contract and efficiently maintain and operate the same, the City of Millville should take the burden of any inadequacies which may develop.

Cost of Municipal Street Lighting.

A computation of the costs of street lighting service on the basis of two cents per kilowatt hour (see Exhibit P-31, p. 56), which costs appear to be reasonably accurate, and reasonable charges for maintenance, depreciation, taxes and capital return leads to the conclusion that a charge for street lighting of approximately 12 per cent. in excess of those now being paid is a very conservative estimate of the cost of this service. An increase of this amount will still leave the rates at a much lesser amount than is charged by many other companies in the State and should be accepted by the municipality.

On the basis of operations during the year 1922 the company's expert in Exhibit R-8, set forth in Table I, claims that the revenue deductions of the company without the steam plant being considered would aggregate $99,517. Certain items are included in this estimate which do not belong there and others are very much larger than would be justified under efficient management. For instance, the cost of repairs of electric equipment in the station should not aggregate $1,200, especially in view of the provisions hereinbefore made for the replacing of quite a considerable amount of this equipment. The item of $2,400 for production expenses in the steam plant would not exist if the steam plant were discontinued. If the current unaccounted for were reduced to the average of the last five years the amount of current purchased to supply the demands of 1922 would be very materially decreased and the cost of purchased current would be accordingly decreased. The operating expenses for street lamp service aggregating $7,456 is excessive and far in excess of similar expenditures by other comparable companies. Law expenses of $6,454 are entirely abnormal and this item under ordinary circumstances and as compared

with other utilities similarly situated, should not amount to $2,000. Insurance, without a steam plant in existence, would be cut substantially in half. Depreciation, taken at $11,697, would normally be reduced to $5,800, to which the Board has hereinbefore indicated that $500 for special depreciation should be added for a five year period.

If all these adjustments were made and increases in revenue due to adjustments of street lamp rates be made effective, and the very considerable increase in commercial street lighting indicated by the reports for 1923 are taken into consideration, the net operating revenue of $24,512 shown on the company's estimate would be very materially augmented.

The Board, from calculations made, is of the opinion that the schedule of rates hereinafter prescribed will afford the company a just and reasonable return on the property used and useful as hereinbefore set forth.

Conclusions.

The Board therefore finds and determines:

1. That the schedule of rates imposed and charged by the Millville Electric Light Company is unjust and unreasonable.

2. That the following schedule of rates to be charged for municipal street lights, which rates represent an advance of substantially twelve per cent. as proposed by the company, is hereby approved.

ARC LAMPS

MAGNETITE arc lighting units at the rate of $63 per annum.

INCANDESCENT LAMPS

600	candle	power	lighting	units		$54	"	"
400	"	"	"	"		42	"	"
250	"	"	"	"		30	"	"
100	"	"	"	"		20	"	"
60	"	"	"	"		18	"	"

(The various units are more particularly described in the contract between the complainant and the respondent, dated September 17th, 1915, which is hereby referred to and made part hereof.)

3. That a just and reasonable schedule of rates to be charged for commercial lighting and power is as follows:

10 20 30

LIGHTING RATES

SCHEDULE A—Residential, Office, Professional and Club Lighting—All Year Monthly Basis.

For first 30 K. W. or less 13c per K. W. *Discount 1c per K. W. Net 12c per K. W.
Over 30 " all at 12c " " " 1c " " " 11c " "

Schedule B—Store and Commercial Lighting, Including Churches, All Year Monthly Basis.

For First 100 K. W. or less 11c per K. W. *Discount 1c per K. W. Net 10c per K. W.
Over 100
and up to 500 " all at 10½c " " " 1c " " " 9½c " "
Over 500 " " 10c " " " 1c " " " 9c " "

Minimum Charge, $1.00 per Month.

*If paid within ten days after bill is rendered.

SCHEDULE C—Transient Lighting—Monthly Basis.

For first 100 K. W. or less 15c per K. W. *Discount 1c per K. W. Net 14c per K. W.
Over 100
and up to 500 " all at 14c " " " 1c " " " 13c " "
Over 500 " " 13c " " " 1c " " " 12c " "

Minimum Charge, $2.00 per Month.

SCHEDULE D—Sign Lighting, Average Lighting three (3) hours or more each week night —Monthly Basis.

For first 100 K. W. or less per month 8c per K. W. *Discount 1c per K. W.
Net 7c " "
Over 100 " per month all at 7c " " *Discount 1c " "
Net 6c " "

Minimum Charge $1.00 per Month.

*If paid within ten days after bill is rendered.

SCHEDULE E—Industrial Lighting Rates—Monthly Basis.

When industrial lighting is used in connection with electric power under Schedule A. P, the lighting rate will be one and one-half times the average power rate for the same month.

POWER RATES—Monthly Basis

SCHEDULE AP—

For	first	250	kw. hrs.	7.5	cents	per kw. hr
"	next	250	"	6.5	"	" "
"	"	1,000	"	5.5	"	" "
"	"	1,500	"	5.0	"	" "
"	"	2,000	"	4.0	"	" "
"	"	5,000	"	3.5	"	" "
"	"	5,000	"	3.0	"	" "
Excess over		15,000	"	3.25	"	" "

A MINIMUM CHARGE of one ($1.00) dollar per month per horsepower of connected load will be made for fifty horsepower or less.

For all connected load over fifty horsepower a fifty (50c) cents per horsepower per month will be made.

At the time the present rates were made effective, the company stated in a public advertisement that it would make such refund as the decision of the Board might require. The Board will permit the company to file the schedule of rates hereinabove set forth to become effective as of January 1st, 1923.

Dated, August 22nd, 1923.

BOARD of PUBLIC UTILITY COMMISSIONERS,
(Seal) By (Signed) H. V. OSBORNE,
President.

Attest:
(Signed) ALFRED N. BARBER,
Secretary.

I hereby certify the foregoing to be a true copy of a decision rendered by the Board of Public Utility Commissioners and ordered filed by said Board.

ALFRED N. BARBER,
Secretary.

APPENDIX "A"

Near the end of a dam built and owned by the Millville Manufacturing Company the Millville Electric Light Company built, in the early 90's, a hydro-electric plant for the supply of electrical energy to the City of Millville. This plant was equipped with two water wheels, one of 90, the other 60 horse power rated capacity. These two wheels are permanently connected by means of a jaw clutch. The pair of wheels therefore comprises a unit rated at 150 horse power. At both ends of the combined unit are located pulleys of the same size, these pulleys being both belted to a line shaft. One belt is of leather, having a very good frictional co-efficient. The other belt is what is known as a Gandy belt, which is a woven canvass belt, saturated with a water-proofing material. To obtain the same pulley friction a Gandy belt must be from 50 to 100 per cent. wider than if a leather belt is employed. The result is that the Gandy belt, being the same width as the leather belt, slips considerably more than the leather belt and this combination therefore results in a considerable loss of power.

From the line shaft driven by the pair of water wheels are driven two generators. One is a 75 light Brush arc machine of the very earliest type, rewound, however, for 5 amperes. The other machine is a 300 kilowatt, 2300 volt, 3 phase, 60 cycle alternator. When the arc machine is not in use the maximum load which can be carried upon the alternating current generator is 112 kilowatts. During the night the arc machine is operated with 29 lamps, requiring at the lamps about 10 kilowatts of energy. Inasmuch as this arc machine is, under such conditions, operated at not in excess of 30 per cent. efficiency, the power consumed in driving the arc machine is not far from 40 horse power. To obtain the full rated capacity of the 300 kilowatt alternator, about 400 to

450 horse power would be required. The maximum capacity of the water wheels is about 150 horse power and when the arc machine is in use, which is throughout the entire night when street lighting is required, the power available for driving the alternator is approximately 110 horse power, or about 80 kilowatts.

This company first began the sale of electricity about 1892. It appears that prior to 1920 it had either purchased or generated by hydraulic power, all of the electricity which had theretobefore been sold by it. The current generated by this water power is now used to furnish the municipal street lighting service at night and commercial service in the daytime. Due to the growth of the company's business the erection of a steam plant was started in 1916 and completed about April, 1920. The steam plant was located adjacent to the plant of the Cumberland County Gas Company's plant and a mile or more from the hydro-electric plant, the company claiming that it was not advantageous to locate the new steam plant adjacent to the hydro-electric plant.

The equipment of the steam plant consists of a pair of Babcock & Wilcox boilers, one 500 kilowatt, 6600 volt, 3 phase, 60 cycle alternator mounted on a shaft of a cross compound side crank Rice & Sergeant engine. The engine operates condensing, the condensing water being cooled by the cooling basin just outside the plant. The steam plant is connected with the hydro-electric plant by means of a 3-wire, 3 phase circuit, operating at 6600 volts. At the hydro-electric plant there are three 300 k. v. a. transformers for stepping down the voltage from 6600 to 2300 volts. There are about six power customers served from the 6600 volt line, and on this account this tie line must be kept alive at all times and the 6600 volt-2300 volt transformers are likewise alive at all times. This results in a very great loss of

efficiency as the amount of power required by the customers referred to is very small during a great part of the time.

The boilers now in the steam plant were originally installed in the Philadelphia City Hall in 1897 and were sold for the price of junk in 1916. They are of 400 horse power capacity each. The plant equipment includes two boiler feed pumps both stated by General Manager Franklin (see testimony, p. 304) as being larger than necessary. The Rice & Sergeant engine is about twenty-one years old and was bought second-hand in 1916. It has been wrecked several times and each time repaired. The amounts expended for repairs to this old equipment have been excessive and improper plant design or carelessness in operation, or both, are clearly indicated by the recurrence of accidents. The generator is about twenty-one years old, of a slow speed type, 6600 volts, 3 phase, 60 cycles, and is apparently in good order. The main exciter consists of a high speed Ames engine, direct connected to a 50 kilowatt Eddy generator. This unit is of an old type, bought second-hand in 1917, and is several times as large as is needed for the purpose. Field excitation is also obtained by means of a motor generator set, bought second-hand in 1921, built in 1904. This unit also is much too large for its proper purposes, resulting in inefficiency. The condensing equipment is operated by electric power and this electric energy has been included under the head of current sold, in this way distorting the records of station output.

APPENDIX "B"

Comparative Values of Tangible Fixed Capital as Found by Board of Public Utility Commissioners.

Item	Cost of Labor & Material	%	Overhead	Cost to Reproduce	Accrued Depreciation	Present Value	Annual Depreciation	
EXHIBIT P-31, SOME ITEMS OF PROPERTY INCLUDED BELOW ARE OMITTED IN THIS EXHIBIT.								
Hydro-electric plant,	$ 327.83	1.5	$ 492	$ 33,275	$16,148	$ 17,127		
Distribution accounts,	112,017	11.5	12,882	124,899	29,887	95,012		
General Account,	1,630	1.5	24	1,654	739	915		
Sub-total,	$146,430		$13,398	$159,828	$46,774	$113,054		
Working capital (Mat. for current maintenance one mo. operating expenses)						6,000		
Intangibles,						0		
Total,	$146,430		$13,398	$159,828	$46,774	$119,054		
EXHIBIT R-10, ADJUSTED TO INCLUDE SAME ITEMS OF PROPERTY AS INCLUDED BELOW.								
Hydro-electric plant,*	$ 64,374	19	$12,431	$ 76,805	$14,430	$ 62,375		
Distribution Accounts,	117,834	19	22,696	140,530	13,603	126,927		
General Account,	1,630	19	310	1,940	628	1,312		
Sub-total,	$183,838		$35,437	$219,275	$28,661	$190,614		
Working Capital,						20,780	Omitting item for coal	
Going Concern Value,						50,000		
Total,	$183,838		$35,437	$219,275	$28,661	$261,394	Total excl. steam plant and property, not used.	

APPENDIX "B"—(Con.)

Comparative Values of Tangible Fixed Capital as Found by Board of Public Utility Commissioners.

Item	Cost of Labor & Material	%	Overhead	Cost to Reproduce	Accrued Depreciation	Present Value	Annual Depreciation
			AS FIXED BY THE BOARD.				
Hydro-electric plant,*	$60,991	15	$ 9,084	$ 70,075	$20,390	$ 49,685	
Distribution—Commercial,	79,172	15	11,876	91,048	15,136	75,912	Allocated in part.
Distribution—St. Lights,	36,556	15	5,483	42,039	10,110	31,929	" " "
General Account,	1,630	5	82	1,712	732	980	
Sub-total,	$178,349		$26,525	$204,874	$46,368	$158,506	
Working capital,						15,000	
Intangibles,						20 000	
Total	$178,349		$26,525	$204,874	$46,368	$193,506	
Estimated Additions to 7-1-23,**				15,000	3,000	12,000	
Taken as,				$219,874	49,368	$205,506 $206,000	$6,300

*Includes $20,000 as the value of water rights. Same is omitted in summary P-31 but equivalent annual charge is included in operating expenses.

**Includes $10,000 of normal additions and $5,000 for replacements account of improvements to Hydro Plant and change of 6600V circuit to 2300V.

ORDER AND SUPPLEMENTAL DECISION

STATE OF NEW JERSEY

BOARD OF PUBLIC UTILITY COMMISSIONERS

IN THE MATTER OF THE INVESTIGATON OF THE RATES OF THE MILLVILLE ELECTRIC LIGHT COMPANY. } ORDER

This case having been duly submitted and full investigation of the matters and things involved having been had, and the Board having on August 22nd, 1923 made and filed a decision containing its findings of fact and conclusions thereon, which said decision is hereby referred to and made part hereof; and having, after notice, reopened the case for further hearing and having on the date hereof made and filed a supplemental decision containing its further findings of facts and conclusions thereon, based on the entire record, which said supplemenal decision is hereby referred to and made part hereof;

The Board of Public Utility Commissioners, after hearing, upon notice, by virtue of the power and authority conferred upon it by statute, now on this the twenty-ninth day of October, nineteen hundred and twenty-three;

DETERMINES that the schedule of rates or charges for electric energy made by the Millville Electric Light Company prior to September, 1923, in the territory served by it was unjust and unreasonable; and fixes as just and reasonable the following schedule of rates or charges for the sale of electric energy:

ARC LAMPS.

MAGNETITE arc lighting units at the rate of $63 per annum.

INCANDESCENT LAMPS.

600	candle	power	lighting	units	$54	"	"
400	"	"	"	"	42	"	"
250	"	"	"	"	30	"	"
100	"	"	"	"	20	"	"
60	"	"	"	"	18	"	"

(The various units are more particularly described in the contract between the complainant and the respondent, dated September 17th, 1915, which is hereby referred to and made part hereof.)

30 20 10

LIGHTING RATES

SCHEDULE A—Residential, Office, Professional and Club Lighting—All Year Monthly Basis.

For first 30 Kw. or less 13c per Kw. *Discount 1c per Kw. Net 12c per Kw.
Over 30 " all at 12c " " " 1c " " " 11c " "

SCHEDULE B—Store and Commercial Lighting, Including Churches—All Year Monthly Basis.

For first 100 Kw. or less 11c per Kw. *Discount 1c per Kw. Net 10c per Kw.
Over 100
and up to 500 " all at 10½c " " " 1c " " " 9½c " "
Over 500 " " " 10c " " " 1c " " " 9c " "

Minimum Charge $1.00 per Month.
*If paid within ten days after bill is rendered.

SCHEDULE C—Transient Lighting—Monthly Basis.

For first 100 Kw. or less 15c per Kw. *Discount 1c per Kw. Net 14c per Kw.
Over 100 "
and upto 500 " all at 14c " " " 1c " " " 13c " "
Over 500 " " " 13c " " " 1c " " " 12c " "

Minimum Charge $2.00 per month.

SCHEDULE D—Sign Lighting, Average Lighting three (3) hours or more each week—Monthly Basis.

For first 100 Kw. or less per month 8c per Kw. *Discount 1c per Kw.
Net 7c " "

Over 100 " per month all at 7c per Kw. *Discount 1c per Kw.
Net 6c " "

Minimum Charge $1.00 per Month.
*If paid within ten days after bill is rendered.

SCHEDULE E—Industrial Lighting Rates—Monthly Basis.

When industrial lighting is used in connection with electric power under Schedule A. P., the lighting rate will be one and one-half times the average power rate for the same month

POWER RATES—Monthly Basis.

SCHEDULE AP—

For first	250	Kw. hrs.	7.5	cents per	Kw. hr.
For next	250	"	6.5	" "	"
" "	1,000	"	5.5	" "	"
" "	1,500	"	5.0	" "	"
" "	2,000	"	4.0	" "	"
" "	5,000	"	3.5	" "	"
" "	5,000	"	3.0	" "	"
Excess over	15,000	"	3.25	" "	"

A MINIMUM CHARGE of one ($1.00) dollar per month per horse power of connected load will be made for fifty horse power or less.

For all connected load over fifty horse power a fifty (50c) cents charge per horsepower per month will be made.

which schedule of rates or charges shall on and after December 1st, 1923, and until otherwise ordered, be imposed, observed and followed in said territory, in all cases where the schedule of rates heretofore imposed by the company would otherwise apply.

Dated, October 29th, 1923.

BOARD OF PUBLIC UTILITY COMMISSIONERS

(Seal) By (Signed) H. V. OSBORNE,
President.

Attest:
(Signed) ALFRED N. BARBER,
Secretary.

I hereby certify the foregoing to be a true copy of an Order adopted by the Board of Public Utility Commissioners at its meeting held Monday, October 29th, 1923, and recorded in the minutes of said meeting.

ALFRED N. BARBER,
Secretary.

STATE OF NEW JERSEY

BOARD OF PUBLIC UTILITY COMMISSIONERS

IN THE MATTER OF THE INVESTIGATION OF THE RATES OF THE MILLVILLE ELECTRIC LIGHT COMPANY. } SUPPLEMENTAL DECISION

LEWIS STARR, for the Company.
LOUIS H. MILLER, for the City of Millville.

On August 22nd, 1923, the Board rendered its decision, determining just and reasonable schedules of rates which the Millville Electric Light Company might file, effective January 1st, 1923. These schedules reduced the rates for private power and lighting approximately 25 per cent. and increased the rates for municipal street lighting approximately 12 per cent. The decision refers to the origin of this proceeding.

In Febraury, 1921, at a time when no members were serving on the Board of Public Utility Commissioners, the company published and put into effect a schedule of increased rates (testimony, October 4th, 1921, page 3). This schedule had been previously suspended by agreement for a period of three months, but in February, 1921, the period of suspension expired. At the time the company put into effect its higher schedule of rates it voluntarily issued a notice to its customers stating, in part, "The Electric Light Company will, upon payment of all bills, give the customer a receipt guaranteeing to abide by the decision of the new members of the Board and if such calls for a rebate upon the payment already made, the Company will, upon the pre-

sentation of said receipt promptly make any refund such decision shall call for or require."

After the issuing of the Board's decision in August, 1923, complaint was made that the current bills were being sent out by the company computed under the schedules effective in 1921. A hearing was called to ascertain the company's intentions with respect to filing and observing the schedules which the Board indicated it would permit the company to file. Subsequent to the calling of this hearing the company filed the schedules indicated in the Board's decision but did not make same effective as of January 1st, 1923.

Counsel for Millville, during the first hearing before this Board, stated that his client would not pay the increase for bills rendered in the interim in excess of that required by the street lighting schedule contained in the 1915 contract with the company. In Exhibit P-31, page 57, however, submitted on behalf of the city, it was suggested that the schedule of rates to be fixed by the Board be made effective as of January 1st, 1923 and this suggestion was accepted by the Board and incorporated in its conclusions, it being the opinion of the Board that the suggested effective date, taken in connection with the company's guarantee to refund above cited, would result in a refund by the company to private consumers of the excess payment due to the fact that the Board found these rates should be reduced, but on the other hand, the city would be obligated to pay increased rates for municipal street lighting from January 1st, 1923.

Counsel for the company (testimony, October 16, 1923, page 28) stated that:

> "The company has assumed and I think Mr. Miller has assumed that the promise to rebate ended when there had been a determination by Judge Treacy that those rates were

legally in effect, and that has been the attitude of the company all along."

As a matter of fact, Judge Treacy decided nothing except to interpret the statute referring to the right of the company to file a schedule of rates which would be legal until such time as suspended or set aside by this Board. The Board therefore rendered no final decision in this matter until August 22nd, 1923, and, in the opinion of the Board, Judge Treacy's remarks during the course of the hearing leading to this decision did not relieve the company of the moral obligation imposed by its voluntary agreement to refund.

The company's notice above quoted would indicate that it intended to abide by the Board's decision and refund any revenue received by it in excess of that which would have been derived from the schedules finally fixed by the Board in August, 1923. The city, in view of the suggestion contained in Exhibit P-31, above quoted, would be liable to the increased street lighting rates from January 1st, 1923 as proposed by it in said exhibit. Legally, however, the Board has no power to enforce reparation by requiring the company to refund excess revenue nor to require the city to pay the increased municipal street lighting rates retroactively to January 1st, 1923. This was set forth by the Board in its decision in the matter of William Flemmer, Inc., vs. West Orange Water Company (N. J. B. P. U. C. Vol. II, p. 533). The Board in that decision, dated May 12th, 1914, said:

> "This Board is a statutory body. It has no powers other than those conferred by the statute creating it. The power to require a public utility to refund or repay moneys improperly exacted by it has not been granted to it by statute.

"If, therefore, the Board were to treat this letter as a complaint, call for an answer by the company, and hold a hearing and as a result of such hearing should find the facts to be as stated, and should conclude that the payment in question was exacted without right, still the Board would be without power to order repayment."

In view of these statutory limitations upon its powers in fixing just and reasonable rates to be charged, the Board did not attempt to make the schedule depend upon whether or not the company would make reparation as above indicated or whether or not the city would pay the increased schedule of rates for municipal street lighting from January 1st, 1923. Therefore, the schedule as fixed was made permissive and not mandatory as to its effective date upon the assumption that the company would abide by its voluntary offer to make reparation.

After the rendering of the decision the company filed as its legal schedule of rates the schedules set forth in the Board's decision, not, however, making the effective date January 1st, 1923. In view of the fact that the rate schedule as found by the Board has already been filed, it is not necessary for the Board to issue an order requiring the company to do that which it has already done, but inasmuch as the company has requested an order be issued in order that it may be in a position to take an appeal therefrom, the Board will issue an order based upon its decision requiring the company to make effective the schedule of rates fixed by the Board and as filed by the company. As above indicated, as the schedule fixed by the Board was based upon future operations and not upon the company's voluntary offer of reparation, therefore, no further determination in

that respect will be made, but the schedule will remain as fixed and filed.

October 29th, 1923.

BOARD OF PUBLIC UTILITY COMMISSIONERS

(Seal) By (Signed) H. V. OSBORNE,
President.

Attest:

(Signed) ALFRED N. BARBER,
Secretary,

I hereby certify the foregoing to be a true copy of a decision rendered by the Board of Public Utility Commissioners and ordered filed by said Board.

ALFRED N. BARBER,
Secretary.

BOARD OF PUBLIC UTILITY COMMISSIONERS

Vineland, N. J., Tuesday, October 4th, 1921.

MILLVILLE ELECTRIC LIGHT COMPANY. IN RE RATES. REOPENING MATTER WAS HEARD BY OLD BOARD AND RECORD NOT COMPLETED.

Before the following Commissioners:
J. J. TREACY, Esq., President,
HARRY V. OSBORNE, Esq.,
HARRY BACHARACH, Esq.

For the Petitioner appears:
LEWIS STARR, Esq.

Mr. Starr: I appeared for the petitioner when this application was originally presented. The petition was filed in October last—well, the earlier petition was filed I think, in August, and between that time and the time fixed for the hearing, the prices of materials had advanced so it was necessary to file an amended petition. That was done and in October a hearing was had, the people were notified, we took testimony and the hearing was completed; both sides presented all the testimony they desired to present. The former Commission, however, did not dispose of the matter, and finally, in February, a schedule was filed in accordance with the original petition and these rates have been in effect since February.

There is nothing we can add to the testimony which was presented in the original application, and my suggestion is that, in order to make the record complete and bring the picture down to date,

is to offer in evidence formally the monthly statements which have been submitted to the Board each month since the new rates were made effective.

Commissioner Treacy: Then this schedule is in effect?

Mr. Starr: Yes; this schedule is in effect; we waited the statutory period of three months for the former Board to act—

Commissioner Osborne: They weren't active, were they?

Mr. Starr: I don't know whether they were or not.

Commissioner Osborne: When did you put the rates into effect?

Mr. Starr: The first of February, this year.

Commissioner Osborne: Of course there wasn't any Board acting then?

Mr. Starr: The hearing was had in October.

Commissioner Osborne: That is all right. There was no Board acting when you put those rates into effect.

Mr. Starr: That is true.

Commissioner Osborne: Is there any provision that you shall refund the money—

Mr. Starr: No provision, but that was the promise which was made.

Commissioner Osborne: To whom?

Mr. Starr: To the customers.

Commissioner Treacy: What is involved here, Colonel?

Mr. Betts: The company, in sending out notice to its customers stated that they would put into effect this rate at this time and then later adjust the rates and adjust the accounts with the customers, based on what the Board finally determined, and of course, the Board never did finally determine the matter.

Mr. Starr: Here is the notice that was sent out when the rates were made effective: "The Millville

Electric Light Company petitioned the State Public Utility Commission last November for the following rates (shown below) to cover increases of cost in the production and distribution of electric current. The Commission suspended the adoption (or secured our promise to do so) of the rates for three months. This time having elapsed, the rates will now be put in force from the dates of the meter readings on the last of February.

So that all the customers shall be treated with entire fairness, and not suffer any loss from the suspension of the Public Utility Commission, by the late action of the Governor, the Electric Light Company will, upon the payment of all bills, give the customer a receipt guaranteeing to abide by the decision of the new Board, and if such calls for a rebate upon the payment already made, the company will, upon the presentation of said receipt, promptly make any refund such decision shall call for or require."

Commissioner Treacy: You say "by the late action of the Governor?"

Mr. Starr: Yes, the suspension of the Public Utility Commission by the late action of the Governor.

Commissioner Treacy: I see.

Mr. Starr: This matter arose in October, when the old Board was functioning, and almost immediately after that the difficulty arose and they failed to render any decision upon the case as made.

Commissioner Treacy: And you want a decision so that you will know whether to turn this money back to the customer or keep it?

Mr. Starr: I don't know that we want a decision. We are perfectly willing to have the rates continue; it is left up in the air. I might add that the statements show that every month since February, the company has run behind.

Commissioner Bacharach: Was Millville notified of this hearing today?

Mr. Franklin: Yes, sir.

Commissioner Bacharach: Was the Mayor of Millville notified?

Mr. Franklin: The Mayor of Millville was notified of this Commission's meeting, and all of the Commissioners and also their attorney, Mr. Miller.

Mr. Starr: The only action we had was the letter from Mr. Barber, saying that the Board, of its own volition, was to reopen the hearing.

Commissioner Bacharach: You made much of the fact that while the other case was pending, you had asked for a still higher rate; what did you mean?

Mr. Starr: What happened was this, the first application, the original rates were based on a twelve cent basis, and we made an application to increase to sixteen cents, pending the hearing. Before the first petition was heard, material and labor had increased so it was necessary to file a twenty cent rate, but when the schedules were put into effect, they were limited to sixteen cents, and those are the rates which are now in existence.

Commissioner Treacy: Which rates?

Mr. Starr: Sixteen cent rates.

Commissioner Treacy: Is there anybody here representing Millville?

Mr. Franklin: No, sir.

Commissioner Bacharach: That is the reason I asked that question before.

Mr. Franklin: They knew it last Friday.

Mr. Starr: I think possibly I can suggest a reason for that: We have had more or less trouble over this situation in Millville, the electric light situation, and immediately after the present rates were made effective, the city filed a bill in the Court of Chancery to restrain—

Commissioner Treacy: Yes, I noticed that. What became of that?

Mr. Starr: That case is set down for final hearing on the 17th of this month, and I imagine they are placing more reliance on the Court of Chancery. It is set for final hearing on the seventeenth, and that may be the reason they are not here today.

Commissioner Treacy: Yes, I think it is good policy to wait until the Court of Chancery acts before we do anything here.

Is Millville the only place interested?

Mr. Starr: Yes, sir.

Commissioner Treacy: We will lay the matter over without day.

(Matter adjourned without day.)

BOARD OF PUBLIC UTILITY COMMISSIONERS

Trenton, N. J., Tuesday, December 13, 1921.

MILLVILLE ELEC. LT. CO. IN RE INVESTIGATION OF REASONABLENESS OF RATES.

Before the following Commissioner,
J. J. TREACY, Esq., President.

For Millville Electric Light Co. appears:
LEWIS STARR, Esq.

For City of Millville appears:
LOUIS H. MILLER, Esq.

Mr. Miller: As I recall the situation, if your Honor please, in August, 1920, the Millville Electric Light Company filed an application for an increase of rates with a certain schedule attached. Afterward, testimony was taken and the Company filed an amendment to the first petition. Subsequently, I think on the 20th of October, 1920, the Electric Light Company notified the City of Millville that it would ask leave to withdraw the first petition, and on the 26th of October, 1920—I think the record will show that—Judge Starr did move to withdraw the first petition and it was withdrawn and—I suppose you would recall it—the new petition was filed with another schedule of rates higher than the original petition. It was at the time, as your Honor knows, the old Commission was ousted or ceased to function.

I find, from a recital in a letter prepared by Mr. Franklin, which was given great publicity in all

sections, that the then functioning Utility Board, on the 26th of October, after the order for removal had been filed by the Governor, when this matter was presented to them, obtained from Mr. Franklin a promise to suspend the proposed increased rate for a term of three months. Of course your records will show that; his public letter says that. The next thing or event was a notice from the Electric Light Company to the public, through newspapers, and to the Commissioners of the City of Millville that on March 1, then next, the Company proposed to put in force a certain schedule of rates which, if your Honor please, were not those of the petition that had been filed on the 26th of October, but were the rates which had been prayed for in the August petition, which had been withdrawn.

Then the City of Millville—there being at that time a hiatus in the Board—filed a bill for an injunction to restrain the new rates being put in force and Vice Chancellor Leaming, shortly after your appointment, held that there was only one remedy, and that was for application here. In anticipation, if your Honor please, of such a decision, or rather perhaps not in anticipation of it, but to provide against such a decision, I wired to the Secretary of the Board a protest against those rates going into effect or had some hopes that there would be a hearing or something done. The City of Millville was then notified by your Secretary that there was nothing pending before the Board. Afterward, however, in the Fall, came notice that your Board had determined that there was a matter undisposed of relating to these electric light rates and that is what we are here on now. My understanding is we are now here on the petititon filed October 26 for a rate. Is that your Honor's understanding? Is that your understanding, Judge Starr?

Mr. Starr: Well, hardly.

Mr. Miller: Well, evidently then you are here on the Board's own initiative.

Mr. Starr: Mr. Miller's statement of the facts is substantially correct. Prior to August, 1920, the prevailing rate—

Commissioner Treacy: I have sent for Mr. Barber. Perhaps it would be better if you wait until he comes. There are probably some negotiations that he has been conducting, some correspondence.

Mr. Miller: Oh, yes, I have had correspondence.

I might supplement my statement, Judge Starr, by adding, subsequently the Court of Chancery, on final hearing—we went to final hearing on receiving the notice from Mr. Barber that a meeting was to be held, and when we did get the final hearing, your Honors had taken this matter up. You will remember you had a hearing, a very short hearing, and on final hearing the Court took the same attitude; that is, the relief was—

Commissioner Treacy: The only thing that we did was to call the case.

Mr. Miller: But I mean it was alive then and pending and you had a hearing. It was some time before this—

Commissioner Treacy: I do not think we heard anything at the time.

Mr. Miller: Well, you had a hearing, I think, if your Honor please, which brought us in before you.

Commissioner Treacy: Well, there must have been some application—

Mr. Starr: No, that was purely, as I understand it, upon the initiative of either the Board or Mr. Barber.

Mr. Miller: I think the records would show.

Commissioner Treacy: Mr. Barber will have it all.

(Mr. Barber arrives.)

Mr. Starr: Now, the rate which was in force, the base rate which was in existence prior to August, 1920, was 12 cents—

Commissioner Treacy: First let the stenographer read Mr. Miller's statement and after that you may proceed.

(Statement read.)

Mr. Miller: There is no question about it being withdrawn. There is a letter from the Company notifying us they would withdraw.

Mr. Starr: As I started to say, the base rate prior to August, 1920, was 12 cents per kilowatt. In August, an application was made to increase those rates to 16 cents and the next petition and schedule was filed for that purpose. Owing to the fact this was filed in vacation, it was not put on the Board's calendar until some time in the latter part of September; scheduled to be heard in September.

The application of August was based upon the operation of business up to about the 1st of July, and after the 1st of July the cost of materials and labor had increased so that the Company—any way it was necessary to make a supplemental application to be heard along with the original application, and I think the increase then was to 20 cents per kilowatt. When we came up here to be heard on the original application and supplemental application, it was developed that proper notice had not been given of the increase from 16 to 20 cents and the Board refused to hear that application. Subsequently a new and formal petition was prepared, with schedules attached, making the rate 20 cents. Proper notice was given, and at the hearing, which was the 26th

of October, the case was called, testimony was presented and evidence closed. My recollection is that Mr. Miller was not present at that hearing on October 26.

Now it developed, of course, in accordance with the usual practice, to inquire of the petitioning Company whether they agreed to a suspension of the rates until the matter was disposed of by the Board; that inquiry was put to us and we agreed to a suspension of the rates for a period of time not exceeding three months in order to give the Board sufficient time in which to dispose of the matter in the regular course of its business. For some reason unknown to the petitioner, the old Board did not dispose of that application. They never rendered any report on the case as developed by the petition and the testimony.

Along about the 1st of February, after the expiration of the three months, the Company filed a schedule with the Board for a 20 cents rate and notified the municipality that from the 1st of March that rate would be put into effect. That was done. Nothing was heard on the matter. The old Board never disposed of the original application and, so far as I know, the present Board never took any cognizance of the matter until September 21, when we received from Mr. Barber the following letter:

> "Among the matters heard but not decided by the predecessors to the existing Board of Public Utility Commissioners was the question of the reasonableness of the rates charged by the Millville Electric Light Company.
>
> "This proceeding will be reopened by the Board at a meeting to be held by it at the State House, Trenton, on Tuesday, October 4, 1921, at 11:00 A. M. at which time and place the Board

will afford interested parties opportunity to be heard. Very truly yours,"

That time and place was subsequently changed, as your Honor will remember, from Trenton to Camden and then to Vineland and on the day indicated I appeared on behalf of Petitioner and we were there ready to go on with the taking of evidence in case the Board determined that was the advisable thing to do. The only thing that was done, I think--I don't know whether it was your Honor's suggestion, but somebody suggested the record should be cleared in order to bring the history of the case to date, and we introduced our evidence formally, all of the statements and reports filed by the Company up to the time the hearing was held. It developed that Vice Chancellor Leaming had set for final hearing that injunction proceedings for the following Monday and this Board did nothing with reference to it on this day. Subsequently the case was heard before Vice Chancellor Leaming and I think his opinion was to the effect that he held there was no necessity to have the Court of Chancery take cognizance of this question, the reasonableness of rates, when this Commission had been established by the State for that purpose and they were better equipped to dispose of the matter. That is my understanding of the situation, and the next thing that happened was the notice from the Commission, from Mr. Barber, that the Commission had determined to re-open the case.

Commissioner Treacy: Mr. Barber, is that your understanding of the situation?

Mr. Barber: Yes.

Commissioner Treacy: Now, then, the Company filed rates with the old Board. The old Board had the power to suspend those rates, but whether it exercised the power or not, it only had the power to

extend or suspend for three months at that time. If the time went by, the rates became effective under the law and under the decision of the Court of Errors and Appeals, which was handed down in the Hackenensack Water Company case, the construction of the provision of the Public Utility Act bearing on that subject is that the filed rates become the rates of the Company after the period of suspension has expired as well as, incidentally if there would be a reversal by the Supreme Court, so that the situation, as it now stands, with respect to those rates, is that they are now the legally existing rates, as I see it, of the Millville Electric Light Company, and it becomes the duty of anybody attacking those rates to show that they are unjust and unreasonable.

Mr. Miller: If your Honor please, the rate they filed and which was suspended for three months was a higher rate and not the one they are using.

Commissioner Treacy: Well, they had the right to put a higher rate into effect and if they desired to put a lower rate into effect, I do not see—

Mr. Starr: The rates which are now effective were filed after the 1st of February of this year.

Mr. Miller: February 26.

Mr. Starr: February 26; and those were a little lower than the established rates that have been in effect.

Commissioner Treacy: The fact is that there was a proceeding pending in the Court of Chancery on the question of these rates and this Board could not with propriety take any cognizance of the question until decided by the Court of Chancery, so that in either event the time was gone by within which a suspension would operate and therefore the rates were in effect when the time went by.

Mr. Miller: Concerning that fact, if your Honor please, and we admit it is logical, there is this point:

Here was a pending petition asking that the rate be approved. That petition was in the course of hearing when the three-month period expired. It is important then—

Commissioner Treacy: Do I understand that it is a filed schedule of rates?

Mr. Starr: Oh, yes.

Commissioner Treacy: If it was merely a petition to this Board to investigate—I mean, if the Company merely filed with this Board a petition asking this Board to fix just and reasonable rates, then, of course, the provisions of the statute with regard to what shall take place on the filing of the rates by the Company would not be applicable, but if the Company filed the rates; filed a schedule of rates, then the statute is clear and definite as to what takes place. The statute says that those rates become operative and are the rates of the Company unless the Board shall suspend.

Prior to March, 1921, the Board only had power to suspend for a period of three months. It must decide within three months whether the rates as proposed are just and reasonable, but if it didn't suspend and if it didn't decide that they were not just and reasonable, the rates became effective.

Under a recent decision of the Court of Errors and Appeals handed down only ten days ago, in the Hackensack Water Company case, that Court holds just as I have stated; that the legislative act is that the filed rates are the rates of the Company with power in the Board to suspend for the purpose of investigating them for a period of three months. Prior to the Act of March, 1921, and under the Act of March, 1921, if the Board has not been able to fully investigate, it may suspend them for three months further.

Now the situation here is, that if it was a mere petition that the Company filed asking us to investigate and establish what might be just and reasonable rates, then the matter is open on that subject. If a schedule of rates was filed—and the Company declared that it had; that that was the schedule of rates it proposed to put into effect, then those rates are in effect.

Mr. Miller: If your Honor please, I think that would show as follows—your Honor will have to decide the point of law—their petition states as follows:

"Paragraph 21, Exhibit 6. Your petitioner therefore files the schedule of proposed rates set forth in Exhibit 6, attached hereto, to become effective as of November 1st, 1920.

"Your petitioner therefore prays,

"1. That the schedule of rates as shown by Exhibit 6, attached hereto, be approved, to become effective as of November 1st, 1920.

"2. If your Board be of the opinion that the rates, approval of which is requested hereby, be not acceptable, then that your Board shall fix and determine such just and reasonable rates as may be requisite and necessary to furnish your petitioner additional revenue in order that the business of your petitioner may not be conducted at a loss, and that said rates shall be sufficient to produce adequate revenue to cover operating expenses and provide a return upon the capital invested and replace losses sustained in the past, and sufficient to make is possible for the securities of the Company to be sold in order to complete plant construction.

"3. That your petitioner may have such other and further relief as may be requisite and necessary."

So it seems, if your Honor please, that they ask Your Honor to establish a second rate and subsequently to fix a just and reasonable rate, so I am at a loss just how to answer your Honor's interrogatory. It must be that the Board must have jurisdiction under Paragraph 2 of the prayer, which is a prayer to fix a just and reasonable rate, or else we are not here on that. Is that your understanding, Judge?

Mr. Starr: My understanding is that—

Commissioner Treacy: Just as Judge Miller says, there are two prayers in this petition. It is true that a schedule of rates was filed, to become effective as of a certain date, and there is also given to the Board, apparently, the opportunity to investigate whether that schedule is just and reasonable or not; whether it is acceptable or not and if it is not acceptable then that the Board may adopt such schedule as may be just and reasonable. I think that the best way to handle that matter is this (to avoid any legal questions that may arise as to whether or not this is a filed rate and it is effective): For the Board to assume that it is a filed rate that has become effective and is now in operation under the Public Utility Act. The Board will, however, now initiate a proceeding on its own initiative for the purpose of determining whether or not the rates now in existence are just and reasonable.

Mr. Miller: We feel just as your Honor does, and that it is a duty peculiarly characteristic of your Board.

Commissioner Treacy: The Board will conduct this investigation and will send its engineers down to examine the property and obtain as good an appraisement of it as we can get. Of course it will be for the City, if it can do so, to have its own engineer make an estimate of the value of the property.

Mr. Miller: Well, we will do that.

Mr. Starr: You may have all the assistance that we can give you on it. The Company on its part will, of course, proceed to estimate the value.

We have no objections whatever to the proceeding initiated by the Board with reference to the investigation of rates. May I inquire whether or not the Board will take into consideration testimony that was presented under the petition in the fall of 1920?

Commissioner Treacy: I think that we can take into consideration all the testimony and get all the light we can on it.

Mr. Starr: We went to the expense, at that time, in order to show a foundation for the reasonableness of the rate of hiring outside engineers for appraisement purposes. We had the men here and introduced that appraisement in evidence. Now it seems to me that under the circumstances we ought to have the value of the testimony which was produced before the Commsision at that time.

Mr. Miller: If your Honor please, if we could have a copy of that—

Commissioner Treacy: I think that that testimony should be admitted for what it may be worth as to the conditions that existed at the time the testimony was introduced, or as of the time that the testimony purported to portray, but what the Board will have to do is to decide what the rates should be as of today or as of the present time and of conditions as they may appear to the Board, actually.

Mr. Miller: If your Honor please, may we have an opportunity to look at the testimony, or our engineer be given the opportunity—

Commissioner Treacy: Surely, you may do that. I think we have only one copy of that.

Mr. Starr: We have a copy which the City's representative may inspect at any time.

Mr. Miller: Do you want to look at the books? Our engineer says he might want to look at the books.

Commissioner Treacy: I would suggest that your engineer arrange to meet our engineer, the engineer of the Board, so that the Company may not be annoyed beyond measure; for them to go down there together and make their examination of the books.

Mr. Miller: I will announce that Professor W. E. S. Temple is our engineer and will make the examination.

Commissioner Treacy: Professor, if you will get in touch with Colonel Betts, our engineer, and arrange with him as for a time and have him communicate with you—

Mr. Starr: That is perfectly satisfactory. I think it would be more helpful to the Board, if it desires to get accounts—I mean a mere accounting of the Company's properties—we have an expert accountant. I don't know whether or not an engineer can make an examination.

Commissioner Treacy: I suppose the engineers will have expert accountants with them; they usually do.

Mr. Starr: We are perfectly willing to present all the facts, or anything we have. Now the practice in this case, as I understand it, is to have an investigation made and then the testimony will be taken later?

Commissioner Treacy: Oh, yes.

Mr. Starr: That is the orderly method.

(Adjourned to Tuesday, January 24, 1922. at Trenton.)

BOARD OF PUBLIC UTILITY COMMISSIONERS

Trenton, N. J., Tuesday, October 3, 1922.

IN RE INVESTIGATION OF RATES MILLVILLE ELECTRIC LIGHT COMPANY.

Before the following Commissioners:
HARRY V. OSBORNE, Esq., President,
HARRY BACHARACH, Esq.,
J. F. AUTENREITH, Esq.

For the City of Millville, appears:
LOUIS H. MILLER, Esq.
For Millville Electric Light Company appears:
LEWIS STARR, Esq.

Commissioner Osborne: Investigation of rates, Millville Electric Company.

Mr. Starr: Ready.

Commissioner Osborne: That is a long matter, is it not, that will take some time?

Mr. Starr: That was a proceeding to reopen the former finding initiated by the Board. I represent the company and Mr. Miller represents the City. I suppose the Commission is ready to go on with their testimony also.

(After an interruption the case is continued before Commissioner Osborne.)

Commissioner Osborne: State your appearances to the stenogapher for the purpose of the record, please.

Mr. Starr: Lewis Starr; I appear for the utility, the Millville Electric Light Company.

Mr. Miller: I appear for the City of Millville.

Commissioner Osborne: I understand that you have an expert that made an examination of this matter.

Mr. Miller: If your Honor please, we have.

Commissioner Osborne: Will you open the proceeding, please, for the purpose of record?

Mr. Miller: I would like to state to your Honor that the part the City of Millville has taken is that which we said we would take at the hearing on December 13th. Your Honor may not recall just what the proceeding was. Judge Treacy said, the Board will now initiate a proceeding on its own initiative for the purpose of determining whether or not the rates now in existence are just and reasonable. The Board will conduct this investigation and send its engineers down to examine the property and obtain as good an appraisement of it as we can get. Of course it would be well for the City if it can do so to have its own engineer make an estimate of the value of the property. Following that, if your Honor please, the City engineer has collaborated with your engineers and I believe he has a report and will testify. I thought, however, it would be in accordance with the declared policy of the Board to receive the report of its own engineers in the first instance, but I am not insisting on it.

Commissioner Osborne: We think perhaps the better way, particularly in view of the fact that these proceedings are initiated by the Board at the instance of the municipality—you better put your case in, so much of a case as you have, and then it can be supplemented by whatever the Board has accumulated, which is available for both sides.

Mr. Miller: That is perfectly satisfactory. I will call Professor W. E. S. Temple.

W. E. S. Temple, sworn on behalf of City of Millville.

DIRECT EXAMINATION

By Mr. Miller:

Q. Professor, where do you live?

A. I live in Swarthmore, Pennsylvania.

Q. What is your profession?

A. My profession is engineering, at this time I am a Consulting Engineer, have been for several years.

Q. What branch of engineering especially?

A. Electrical, mechanical and general engineer, but chiefly electrical mechanical.

Q. What experience have you had in electrical engineering, Professor, in a general way?

A. About, well, something around twenty-one to twenty-two years. I graduated from the University of Pennsylvania in 1901 and prior to that time had had some years in a practical way in both electric plants, that is, in the installation of electric plant equipment, and in the operation. I was with one of the New Jersey electric companies for some time and then I went—

Q. Did you have a degree in electrical engineering?

A. What is that?

Q. What degree did you have from the university?

A. I got an electrical engineering degree. Then I had some time with the General Electric Company in the manufacture of electrical equipment and was later in the Engineering Department on the design of it and in the Bulk Metal Department on general manufacturing problems. Later with the Pocahontas Colliery Company as Construction Engineer,

which is in southwestern Virginia, and had charge there of the total construction, the actual bare bones money, no overhead involved or any such thing as that, of something over six hundred thousand dollars, including chiefly outside construction work, some inside, a big power plant and so forth.

Q. What sort of plant was that, an electric plant, you mean?

A. Yes, steam driven electrical plant and some sub-stations and a great deal of other stuff. We built a number of miles of roads and I had charge of everything outside the mines in the engineering line. Then I was with the Bell Telephone Company in their Cable Engineering Department, then I was at the University of Pennsylvania in charge—rather I went there as instructor in Electrical Engineering and at the end of two years I was placed in charge of the electrical engineering work at which time there was begun a new Engineering Building and I was charged, in addition to conducting the courses in Electrical Engineering also with the electrical engineering portion of that new building, that Department's portion, the various problems involved in the construction and equipment.

Beginning about 1905, maybe even 1904, some little, but not very extensively until 1905, very nearly continuously since that time I have been engaged in consulting engineering work, this kind of work overlapping my work at the University, taking place during vacations which are approximately one-third of the year, offhand up until 1914, since which time I have been exclusively in consulting engineering work except during the war, when I was really in consulting engineering work for the Government, reorganization and so forth, straightening up difficulties in the ship building program, but it has been entirely engineering practically all my mature life.

Q. What position do you hold in the government of the City of Millville?

A. I am the City Electrical Engineer.

Q. Did you supervise for the city the construction of the plant of the Millville Electric Light Company, of its distribution system?

A. I hardly would say I supervised it, no sir. I wrote the plans and specifications for it and laid the system out and represented the city in the construction of it and have represented it.

Q. That is what I mean.

A. Yes, sir, that is not quite the same.

Q. (By Commissioner Osborne.) It was built by the Company, wasn't it?

A. It was built by the company, yes sir, I had nothing to do with the supervision.

Q. Were the plans laid out by you?

A. Only the lighting equipment for the public street lighting, not the plant itself, no sir, I would not want to be tied in with the construction of this plant.

Q. (By Mr. Miller.) The distribution system you designed, did you not, Professor, for the city?

A. For the street lighting layout, the street lighting equipment I did, yes sir. But as far as the distribution system is concerned we, in an engineering sense, use the words "distribution system" to really mean poles, wires and so forth. That I did not do at all, sir. I did write the specifications with certain restrictions, requirements in overhead construction, which the city's interest would require. But the specific duty in that particular job, which was only one of a great many that I have done for the City of Millville, was the procurement of adequate street lighting and my duties were covered really by that term.

Q. Since 1917 have you been the City Electrical Engineer of Millville?

A. I believe since before that, sir.

Q. Has it been part of your duty to inspect the

distribution system of the Millville Electric Light Company in connection with the street lighting?

A. Hardly so, except in a casual way as to the distribution system, except as far as it served the requirements as set down in the city contract, not beyond that.

Q. Have you specially examined the plant since this investigation?

A. Yes, I have.

Q. What part of the plant did you examine?

A. Well, of course, practically all of it.

Q. The power plant?

A. Yes, all of it within keeping in connection with a job of this kind, which was the checking of its performance, operating costs and so forth, which I have done.

Q. What experience have you had in valuing properties, Professor?

A. My first was about, I should say, seven years ago or eight—of course at Pocahontas we set up the whole valuation for the entire property which I was in charge of doing. In public utilities my first was about 1915, 1916 and 1917 in connection with the Philadelphia electric case which was decided in the last mentioned year, I believe, the latter part of 1916 or the early part of 1917. I was Consulting Engineer on that. Last year I handled a rather extensive—as Chief Engineer, in fact I handled it as the only engineer really, employed quite a staff, to check the valuation of a large number of gas and electric properties, the alleged valuation on which was stated to be around thirty million dollars, but of course the actual valuation was not anywhere near that much as it proved.

Q. Have you testified as an expert in valuation cases, rate cases before any Boards?

A. Yes, before the Public Utility Commission of Pennsylvania and co-operated with the Commission in Maryland. Those two really.

Q. (By Commissioner Osborne.) You testified before this Board?

A. Pennsylvania.

Q. This Board?

A. No sir, not in New Jersey, not prior to this, no sir.

Q. (By Mr. Miller.) You testified as an expert in the Court of Chancery?

A. Yes sir, in a number of cases in Pennsylvania, one of which was for Judge Starr, who is in this case on the other side.

Q. When you examined this plant what was the purpose for which you examined it, what work did you undertake, were you undertaking when you examined it; what were you trying to get at?

A. I was cited or mentioned or affirmed, whatever you may call it, as the representative of the City in this matter of the investigation of the valuation and rates, which has been referred to, of which this case is a part. In fact Judge Treacy, on the day on which the arrangement was made, directed me to get in touch with Colonel Betts, the Chief Engineer of the Commission. Since that time I have been co-operating as zealously and liberally as I have been able to do. The objective I had was to try—I was asked in fact specifically by the Colonel, in fact I believe there were other suggestions of the same kind—

Q. (By Commissioner Osborne.) You were employed by the City?

A. Yes sir.

Q. To make an examination?

A. To co-operate with the State.

Q. Of this property?

A. Yes sir.

Q. For the purpose of testifying, if necessary?

A. Yes sir. Does that answer the question, your Honor?

Commissioner Osborne: I think so.

By Mr. Miller:

Q. Have you made up a valuation of this plant, have you compiled a statement showing the valuation?

A. I have not finished the report on the analysis of production.

Q. Do you want to take that up first?

A. Yes sir.

Commissioner Osborne: He is asking about valuation. Have you made a valuation of the plant?

Witness: No sir, I have not to date, I have more than partly—I mean to say I have proceeded well along with that, but I have not—

Q. You have not finished it?

A. Not quite, no sir.

Q. Have you checked the operating and production costs?

A. I have, in response to a request to do so.

Commissioner Osborne: You know you will shorten this examination. Take that last answer as it stands as an example, you were asked if you had done something and you said "I have." That is a complete answer. You add to it, "In response to a request to do so." That is wholly unnecessary and only encumbers the record.

Witness: Thank you.

Commissioner Osborne: I merely make the suggestion so we can get on with the case rather than to do any more work than is necessary.

Q. Referring to the operation, the cost of the operation of this plant, did you compare that with

the report, any report that the company has made of it, operating costs?

A. I do not know as I understand your question, sir.

Q. They filed, haven't they, what they claim is the cost of operating the plant?

Commissioner Osborne: Why not let them take care of that, that is their problem. You let him show what result he has obtained.

Q. Just state the result of your investigation of the cost of operating this plant.

A. There are three plants, sources of supply, involved in this company's property in Millville, the first of which in point of age is the hydro-electric plant.

Q. (By Commissioner Osborne.) Hydro-electric?

A. Hydro-electric plant located at what is called Sharp Street and the canal. The second source of supply is from the power plant of the Millville Manufacturing Company located at a distance stated to be approximately 800 feet from the hydro-electric plant. The third source of supply is the new steam plant, or a steam plant at least, built along the West Jersey & Seashore at a point right near the gas works of the company, some several thousand feet away from the hydro-electric plant. These three sources of supply feed to a common network of distribution, practically all of which is located, or the control for practically all of which, is located in the plant, in the hydro-electric plant.

Commissioner Osborne: You see I am a layman and I ask for information. The electricity furnished by this company is generated in three plants?

Witness: Yes sir.

Commissioner Osborne: One known as the hydro-electric plant, one at least which you have

designated as the hydro-electric plant, one the power plant and one the steam plant.

Witness: Yes sir.

Commissioner Osborne: That power generated by all three is fed into a central distributing system which is located in or at the hydro-electric plant?

Witness: Yes sir.

Commissioner Osborne: From there the current is sent out to the consumers?

Witness: Yes sir.

Q. Now, Professor, just a moment. The hydro-electric plant is the property of the company, is it not?

A. I believe so, not entirely, no.

Q. The power there is furnished from the pond, the Union Lake Pond?

A. By water power, yes.

Q. The new steam plant you referred to which is built near the gas works along the railroad also belongs to the company, does it not?

A. I believe so, yes, sir.

Q. And some electricity is produced there, is that right?

A. Right.

Q. The third source of supply you mentioned is another power plant of the Millville Manufacturing Company. The company does not own that plant, does it?

A. No sir.

Q. That is an entirely different corporation?

A. Yes sir.

Q. How is the current generated there?

A. By steam.

Q. Steam turbine engines?

A. Steam turbines.

Q. Now you may proceed, if you will, Professor, in your statement.

Commissioner Osborne: Then what the company does is to generate electricity in two plants, the hydro-electric and the so-called steam plant and buy electricity from the Millville Manufacturing Company.

Mr. Miller: That is right.

Witness: That is correct, yes sir.

A. The problem of separating out the cost of production of power involved a complete analysis of the whole operation of the companies for the period for which information was available, some of this information being available from the monthly reports of the company on file in the Commission's office and some of it being obtained by one or more requests at the company's office. The results of the study of the power costs of these three sources are shown on two exhibits which I have prepared and would like to present, the first of which is called Sheet A, Exhibit Number blank until it is assigned one, entitled, "Energy Record, 1917 to 1922" and the second of which—

Mr. Starr: What kind of record did you say that was?

Witness: Energy Record.

Commissioner Osborne: Just a moment before you go to the second; let us dispose of the first. It is essential to mark these exhibits in the order in which they are offered. This is the first exhibit you wish to offer?

Witness: Yes sir.

Commissioner Osborne: Let that be marked P-1.

(Energy Record 1917 to 1922, received and marked Exhibit P-1.)

Commissioner Osborne: Blue print entitled, Millville Electric Light Company, valuation and rate case, Sheet A, Energy Record, 1917 to 1922. Now, the second.

Witness: The second is entitled, "Production and Operating Cost Analysis."

Commissioner Osborne: P-2.

(Production and Operating Cost Analysis received and marked Exhibit P-2.)

Commissioner Osborne: Any objections to these exhibits, Mr. Starr?

Mr. Starr: I think not. I suppose the testimony will support their accuracy. I think we ought to have an opportunity to look them over.

Commissioner Osborne: Yes, you will have copies of them.

Witness: Effort has been made to have these statements which are presented graphically here as compact as it is possible to make them and still keep them illuminating. I would like in a few words to first state what Exhibit P-1 shows, that is called the Energy Record. The top line shows, as far as records of the company which are available, permit it to be shown, the total amount of current generated and available from purchase during the years given in this exhibit, except 1915 and 1916. For those two years, as is noted on the exhibit, there were no records. The figures written at the middle point of each of the blocks for the years represent the values generated in kilowatt hours and in that way not only the quantities, but also the mental picture of the ordinates of them, the values of them can be seen. The amount sold was the only information which was available all the way back to 1915. That is shown on the second curve, with the amounts given for each year also. The source of supply, these three sources which have been referred to are shown just below the amount sold. The records for production of this company's current do not go back beyond 1917, as far as we were able to

find, that is, I mean those records available, the top line, that is the line with the long dot with a capital P marked on it at certain intervals, represents power purchased at different years.

Commissioner Osborne: Just a moment. I think perhaps anyone reading this record might have difficulty in co-ordinating it with the map, it might not synchronize as well as it should. Suppose we designate the top line that you have referred to, so that you can refer to it by a designated initial as A, A being the total amount generated, is that right?

Witness: Yes sir.

Mr. Miller: Mark it so, Professor.

Witness: I will do that.

Commissioner Osborne: That is the top line beginning with 1917. The next line which represents the amount sold begins in 1915, but for the purpose of comparison really begins in 1917, where the other lines begin we will mark that B. The next line headed with figures, 1005431, that we marked C; the next line D, and the one immediately after it E. The next one F and the next one G. Now I think when I interrupted you you were testifying regarding C, were you not?

Witness: Yes sir, may I suggest there are still one or two more curves that you have not referred to, these two here? No record begins on that until 1920.

Commissioner Osborne: The two the witness refers to under 1920, the first one is marked 1126730 and we will mark that H and the one immediately under it designated 982730 we will mark I. Any more?

Witness: I believe that is all, sir.

Commissioner Osborne: Now you may, if

you will, take up the thread of your testimony where I interrupted you.

Witness: I was referring briefly to the curve B, power sold. While it cannot be compared with any other year it is given there to show how the sales have quietly crawled up from a very low value to higher values.

Referring to the curve C, as already stated, that shows the power purchased at the Millville Manufacturing Company's plant. Curve D shows the power developed or generated, rather, in the water plant or hydro-electric plant and curve E, shows the sendout from the hydro-electric plant available for distribution and sale. Curve F shows the unaccounted for power in the system and curve U the amount of power used by the respondent.

Commissioner Osborne: Curve U?

Witness: Yes sir.

Commissioner Osborne: We have none. G?

Witness: G, yes sir.

Commissioner Osborne: What does G show?

Witness: That shows the amount of power used by the respondent.

Mr. Miller: What do you call the respondent?

Witness: Used by the company perhaps you better call it. It is termed respondent in the report before this Commission. I use that term by habit, perhaps.

Commissioner Osborne: What is G?

Witness: G is the amount of power used by the company, by the Millville Electric Light Company, that is power used by the company in its various processes and to meet its requirements, lighting its plant and such things.

Commissioner Osborne: For its own business.

Witness: Yes, for its own purposes, lighting offices and test room.

Commissioner Osborne: Not sold by it?

Witness: Not sold. The sold curve is the one referred to as B. Curve H, which is to the right and does not begin until 1920, is the gross amount of current generated by the steam plant near the gas works.

Q. (By Mr. Miller.) How much was that?

A. How much was what?

Q. The amount generated by the steam plant near the gas works.

A. In what year?

Q. 1920.

A. 1,126,730 kilowatt hours. Curve I shows the amount available from the steam plant, in other words it is the total amount generated less the amount required to be used in the plant in order to generate current and of course to light the plant, a small amount is required to light the plant. This presentation in other words, shows that in the hydro-electric plant there is a negligible amount of power used as is indicated by the small vertical difference between curve D and curve E.

Q. How much was generated in the hydro-electric plant in 1920?

A. It is all shown right on these curves. Would you like me to read that one?

Q. Just that one.

A. 515,463 was generated.

Q. How much was purchased?

A. In 1920, 743,600 kilowatt hours were purchased.

Q. Proceed, Professor.

A. The character of the steam plant is such as to require the use of so-called auxiliaries, a condenser and exciter, a condenser to pump the exhaust steam away from the steam engine, in other words

to maintain a vacuum and an exciter to provide the magnetic field for the generator and very meager information was available for these quantities in the report which the company presented to the Commission so that we went to the company's office in order to get that along with some other things.

We find that the amount of power used in the steam plant is an extremely—that is in order to maintain the operation of the plant it is an extremely large percentage of the total amount generated. I would like to refer to the table at the bottom of Exhibit P-1 which shows the percentages, that is, quantities purchased and procured from the three sources in percents for each of the years, and it is seen there that in 1917 the water power plant supplied 25.8 per cent. and there was purchased 74.2 per cent. and the steam plant, of course, was not operating. In that year there is shown a loss of 12.3 per cent. in terms of power sold. In 1918 the percentage supplied by the hydro-electric plant is 31.7, purchased 68.3, no steam supply. Available 100 per cent; power lost in percent of power sold 5.75 per cent. In 1919, 39.1 per cent was available from the hydro-electric plant, 60.9 purchased power and 13.15 per cent. of the power available was lost, that percentage being in terms of sold again. In 1920 the proportion from the hydro-electric plant was 22.6, from the Millville Manufacturing Company, purchased, 33.4 and from the steam plant 44.0. The amount lost that year in percent of power sold was 14.25, and it should be noted that the power sold that year as is seen from the curve is very much increased over and above any preceding year that the company had. In 1921 a material drop in power sold is shown and still a great drop in 1922.

Q. (By Mr. Miller.) May I interrupt you to ask this; was the power sold in 1920 or generated in 1920 nearly double the amount generated in 1919?

A. Very nearly so, yes sir, yes, roughly double.

Q. It went down in 1921, didn't it?

A. Yes.

Q. How do you account for that?

A. Well, they simply did not sell it.

Q. What became of this double amount of electricity generated in 1921 over 1920?

A. I understood you to ask me if 1920 was about double the amount generated.

Q. Yes, that is what I do mean. What became of that excess amount?

A. The disposition of it is shown right on the chart. I can read it off. 1,949,480 kilowatt hours was sold. There was lost, unaccounted for in other words, 277,298 kilowatt hours, a very large percentage in other words, was lost. As I have shown below here 14.25 per cent. was lost. There was used by the company, as far as the records show, 159,015 kilowatt hours. That is the disposition of it. That is how it was disposed of.

Q. What percentage did that make that they used?

A. I have not determined that percentage, I cannot tell you offhand, but I can calculate it for you if you wish to have it.

Q. Don't stop. I thought you had it.

A. No, I haven't that figure before me.

Q. It seems to be about one-eighth of the total production, they used about one-eighth of the total production.

A. It is a very large amount used, not the total production, no, not even one-eighth of the total amount sold, about one-twentieth I think, maybe a little less than one-twentieth.

Q. Five per cent. then?

A. Yes, it was practically all used in the steam plant. That is the feature which I am coming to in just a moment.

Q. I just want to keep track of your story. You say they wasted or lost about 14 per cent.

A. There was unaccounted for 14.25 per cent.

Q. Then you have 5 per cent. more that they used; that makes over 20 per cent. of their entire production that was either used or was not accounted for; used by themselves or unaccounted for.

A. That 5 per cent. you just spoke of was in terms of total power generated. This other is in terms of power sold. If you want it in terms of power generated it will be more like 8 per cent., I would say, it may be 9 per cent. These tables would not form a part of an analysis such as we are setting up and endeavoring to make here, which is between three sources of supply.

In 1921, referring for a moment to that, the percentage of power which the steam plant was able to supply has dropped, that is between 1921 and 1922, has dropped from 44 per cent. which it was in 1920, to 22.7 per cent. in 1921. The amount used by the respondent in 1921 has very greatly increased, it has raised from 159,015 kilowatts to 262,672 kilowatts, that is used by the respondent. In 1922 we have records covering January, February, March and April and these records are set up on curve sheet A. Exhibit P-1 as is shown in the note, the upper right hand corner of the exhibit. The values shown for 1922 are extensions from data from the first four months. Those extensions were made, as everyone would see, by assuming that that rate would apply for 1922 and multiplying it, therefore, by the proper ratio, 3, to make it a twelve months record. It is a long enough record to warrant it being set up alongside of these other records. In 1922, for those four months, expressed in terms of the year, the power used by the company now has become 436,230, which is not far from three times what is was in 1920, the first year the steam plant ran, and most

of it is used in the steam plant. The quantities used each of these three years that the steam plant has run—or at all events for the three periods shown here, 1920, 1921 and 1922, the latter being not quite a year, are shown by the differences between the curves H and I, which are the letters the Commission applied to them, and those differences show the amount of current that that steam plant has required to get its breath, you might say.

Q. (By Commissioner Osborne.) What is that current used for in the steam plant?

A. It is used to run the condenser to supply or provide or maintain the vacuum.

Q. Is it used for the purposes which steam might be used for?

A. Not as advantageously, apparently here as the motor, but steam is very often used for it, to run the condenser pump.

Q. It is like a man trying to pull himself up by his bootstraps then, to develop electricity to get power to run the plant to make electricity.

A. Yes, the pulling up process in the maintenance of a vacuum is an entirely proper one, providing the pulling up is done right. It is a principle of operation that it costs very much less to produce a high vacuum below atmosphere than the benefit from that vacuum and I do not say that that is not so in this case. But this is how much it cost to produce it in this plant. That is the thing we do say. We find that the boiler records, if I may just analyze here for a moment, because it is entirely pertinent to your question, that the boiler records show better than ten pounds of steam per pound of coal, that is, steam made from the boilers. In 1920 there is shown 7.2 pounds of coal per kilowatt hour. It is not assumed that the boiler was producing that year any such amount as 11 pounds of steam or 10 pounds of steam per pound of coal. If it had been it would show up

around 10 times 7 or over 70 pounds of steam per kilowatt hour produced, which is absolutely ridiculouls. In 1921 the pounds of steam, the pounds of coal per kilowatt hour is shown to be 4.6 per pound of coal per kilowatt hour. Even on the basis of 10 pounds of steam produced in these boilers, that is 46 pounds of steam per kilowatt hour, which is also ridiculous. I do not know what in the world it would be if there were no condenser on it, but certainly non-condensing engines in large quantities operate —there are very few non-condensing engines in large sizes, but small size non-condensing engines will show a better performance than that, running non-condensing with no cost for operating the condenser motors. We are not attempting to explain why, but only to show what. Those are the facts as the company's own figures indicate them. I might just say that in the various inspections in the company's offices, in company with your own engineer, Mr. Carver, such information as these determinations are based upon have been obtained, that is from time to time. There were three days at one time and one day another and various other correspondence along the same line. These points I have just referred to in regard to P-1 exhibit, these several curves and the table at the bottom of it are merely to acquaint you with the contents of the exhibit. It is the intention to refer a little bit more to it at a later time, but if I may I would like to refer to P-2, exhibit P-2 which is the curve sheet B, and I think there will be less difficulty in following that, because it is a little more separated. There are three parts to this exhibit. Part 1—may I just mention the title of this exhibit; it is called "Production and Operating Cost Analysis." Number one shows the power account from the sources involved in these properties in Millville. There are, as I say, two of them part of the time, up to 1919 inclusive there were two

and they are numbered 1 and 2, in Part 1 at the top. From 1920 on there are three and they are numbered 1, 2 and 3, 1 being the hydro-electric as the key states and also as the title states; 2 being purchased power and 3 being steam plant.

Q. (By Commissioner Osborne.) Where are these numbers you speak of?

A. Number 1 and Number 2, the key is right here, sir. The numbers correspond for Number 2 and Number 3. In other words the same numbers vertically down at the side. Number 2 is right across the middle of Exhibit P-1 and as indicated it shows the cost in dollars. In this exhibit there are two classes of cost, those above the line represent accounts 401 to 416, these accounts being production expense accounts and those below the line represent 400 to 496 accounts, these being other operating expenses than production, such as distribution and utilization and so forth, overhead costs of various kinds. Number 3 represent the unit costs and is in a way, comparable with Number 2, with the exception that it shows the data in cents per kilowatt hour instead of total dollars involved, as is very evident; 2 divided by 1 will give 3 in every case. That is, unit for unit there, 2 by 1, that is the cost divided by the amount purchased will give the unit cost. In 1917—by the way there is a key here indicated here, A, B, C in Exhibit P-2. A represents the total generated. If you will take as example, we will say, the extreme left hand figure there, that for 1917, number 1, A means that in the hydro-electric plant in 1917, 361,040 kilowatt hours were produced. There was used by the company in that plant sufficient to bring the total output from that plant down to 347,240 kilowatt hours. C is the apportionment of the amount sold from this source of supply, that is, the total amount of sales in that year apportioned to this plant is represented by that elevation C. In

Number 2, 1917, which represents, as already stated, purchased power, the total amount available is B and that is shown at the top. C, which is immediately below it represents the apportionment, that is, when I say C, I mean from zero up to C is the apportionment of power sold in the purchased supply. This is true for all succeeding years. When we come to 1920 I wish to briefly refer, if I may, to the year 1920.

Commissioner Osborne: This one refers to the hydro-electric plant (indicating)?

Witness: This refers to the hydro-electric and the purchased. In 1917, 1918 and 1919 those were the only two sources, there was no steam plant, as far as this property is concerned, according to my understanding there was no steam plant, not operating at least, but there were these other two.

Q. (By Mr. Miller.) Professor, how did you apportion it; did you take the percentage of current supplied by steam?

A. I am coming to that in just a moment. May I just finish first? I will come to that in a moment. In 1920 the value A, the amount A, represents the total generation, B represents the total output, net output from that plant. In other words from A to B represents the amount that was used in the plant according to the records in 1920 and the value C, up to C, 859,311 kilowatt hours is the amount, represents the apportionment of power sold to that plant. At this point I would like to state, if I may, that that apportionment is gotten by prorating the amount sold to the total available power from the source. That is the case in each of the three sources, prorating it. That is the only way, that is the way and the only way in which amounts sold from each plant can be determined for the reason that they all

pass into a common distribution system, a common bus bar and the losses are chargeable to the various sources just as they would be in any business proposition or any other thing. The absence of a value A on the purchased power exhibit might be questioned. There is no value corresponding to A on the purchased power, for the reason that the value B is the amount bought transformed and transmitted to the distributing point, which is the hydro-electric plant. The amount C in the steam plant is exactly comparable with that, with the exception that its distance for transmission is very much greater and instead of being stepped up from the generated voltage—I do not mean to mention what that is right now—to a higher one as it is in a manufacturing plant, it is stepped from the higher voltage down to the lower voltage in the hydro-electric plant. It is true that there is a certain amount of it used at points along the way at its generated voltage. The fact that they are in the same class as far as transmission and transformation is concerned makes B on purchased power exactly the same in character as B on steam power.

There is no particular point to describe in regard to Number 2 of Exhibit P-2, that Number 2 being the cost in dollars, with the exception of one thing; there are two quantities indicated for each of the figures above the line, D and E, D being the total cost and E being the net cost. It is noted that in several cases both D and E are applied to the top figures, and that is for the reason that there is no deduction from total cost. If I may I will just refer to one example where there is a deduction and that is in 1920 in the case of Number 1, the hydro-electric plant's total cost is shown as $9042.71. That is the total. There is deducted from that a sum on account of the charge having been made in one of the production accounts for power used there at a cer-

tain price per kilowatt hour, 5 cents I think, which charge should not have been made and that charge appears in that $9042.71. It makes the operating expenses in that plant just that much too big and it has been removed from there in order to get the net operating cost which is $8426.76. That is the character of those deductions, which I do not think it will be necessary to go into in more detail on this now, unless it is desired.

In the steam plant there is another character of deduction. Number 3 for 1920 which represents the total cost of steam production, D being $96,611.44, and net production cost E of $67,449.16, the difference between those as stated here is due to credits, one of which is for the sale of steam and the other of which is a deduction for power charged up in one of the operating accounts, which it should not have been, at least certainly not against this plant so we took it off and that gave us the net producton cost of $67,449.16. That year the total dollars used or required for steam plant operation was three and one-half times the maximum power purchased, I mean the cost of power purchased for that same year, and the quantity of power obtained was in the neighborhood of 15 to 17 per cent. more. That is an example of the beauty of the steam plant. The next year—in fact in detail that is found in the unit cost exhibit which is shown in 3, and before going into detail on this I would like to just briefly refer to how they are set up. Referring to Number 3, unit costs and rates, the first unit cost amounts it was not practical to endeavor to set down on this exhibit, but the accounts are given and I can supply the amounts for each account if desired. The scale being one cent per centimeter of distance on this paper it is seen that in 1917 the cost of the hydro-electric plant, the total cost of production was 1.362 cents per kilowatt hour; the total cost of power purchased that

year was 2.014 cents per kilowatt hour, the average cost of power production that year was 1.798. It is a fact that during those years production costs were certainly lower. The average for that year and each of the years is set up and marked G on this exhibit, and that may be easily read. It is not desirable, is it your Honor, for them to be read into the record as long as they are on the exhibits clearly?

Commissioner Osborne: As indicated for instance in 1917, 1.798?

Witness: That is right, sir.

Commissioner Osborne: That was the average cost?

Witness: Yes, sir. In 1918 1.950. They run for those three years—it is worth noting and calling attention to specifically—under 2 cents per kilowatt hour for production cost for everything, including maintenance of plant and everything else. Now we come to the introduction of the steam plant in 1920 and we find that the average cost for power that year was very nearly 5 cents in spite of the fact that for the hydro-electric production in 1920 the cost was under 2 cents still, 1.915 and the purchased power cost was on the basis of power actually purchased, 2 1-2 cents and on the basis of power sold, 2.86 cents; in spite of those very low figures for the cost of power outside of the steam plant the average cost is 4.84 and in 1920 the amount produced for the steam plant of course, is 44 per cent. as may be seen from Exhibit P-1. In 1921 the average cost for power is substantially the same, 4.72 cents per kilowatt hour in spite of a cost from the hydro-electric plant of 1.703 cents and power purchased price of practically 3 cents, 3.017 on the purchased basis and 3.856 on the sold basis, and that is again due to the presence

of these supply lines—the operation of the steam plant, in spite of the fact that the steam plant participated in the production of power that year only to the extent of 22.7 per cent., in other words it supplied less than one-fourth of the power and it pulled—the purchased percentage was 48.2 and the hydro-electric percentage 29.1, total very nearly 78 per cent. practically, 77.3 per cent., and 27 per cent. from the steam plant pulled the average up to such a value as I have just mentioned and the reason for it is shown in Number 3 under 1921. The fuel cost for that plant, as you will see by referring to the exhibit, exceeds considerably the average cost of power even for the whole system, and very much exceeds the cost of purchased power, just the fuel alone. In 1920 it is not a whole lot better. The maintenance cost in 1921, that is account Number 410,411 and 412, that is, I refer to general maintenance altogether, the major item in that is 412, which is $17,000 in amount. It is shown down here against account 412. The cents per kilowatt hour for account 412, the total is 5.8 cents. That is to maintain this new plant that has not been running at this time quite two years, it is in its second year of life. That is the steam plant, your Honor. A full analysis of the operation of those two plants for those two years, if I may, I would like to go quickly through with. Station wages in the hydro-electric plant, in cents per kilowatt hour and that in the steam plant, are substantially the same, that is, all being based on power sold. apportionment of power sold, because after all it is power sold that has got to pay the bill and it is against power sold that the operating and other costs must be charged to. The hydro-electric plant labor cost is 1.255 cents against 1.205

cents, or approximately five one-hundredths of a cent difference. The other station supplies and expenses being account 403, in 1921 show to be 1.451, that is account 403, against in the hydro-electric plant .983, to both of which are added the cost of lubricants which, in the steam plant, is .075 cents and in the hydro-electric plant a little greater than that, .112 cents. These values are so small, fractions of a cent, that they would hardly be shown in the rate at all. I am showing, however, just how they parallel, those two accounts.

Now we come to the item of station operation, which applies in the steam only, and that is the fuel account which is 402 and the cent per kilowatt hour in 1921 for the fuel account is 9.36, from which is deducted, after the total has been secured, a certain amount for the sale of steam but that sale of steam is not all deducted from the fuel, because some of it has to be deducted from the value of the plant in which the steam is produced and some of it from the labor of producing steam and other production costs. In other words, boiler room costs in general, cost of water and so forth, are all deducted. That steam credit therefore, is not made until the final total of cost production has been secured, but the fuel account 402, is shown on Figure Number 3 for 1921, in Number 3 of Exhibit P-2 and in amount it is 9.360.

Then we come to repairs; station building repairs.

Commissioner Osborne: I think perhaps we better take an adjournment at this time before you start in on another heading. We will adjourn until two o'clock.

RECESS FROM 1:00 to 2:00 P. M.

AFTER RECESS

W. E. S. TEMPLE resumes the stand.

DIRECT EXAMINATION

By Mr. Miller, continued:

Q. Professor, you were testifying that you checked the operating and production costs of the Millville Electric Light Company. Will you proceed with your testimony?

A. Yes sir. We were making reference to Exhibit P-2, Number 3 which shows the unit costs of production and the unit costs of distribution, utilization and overhead, and I just completed reference to the cost of power in the year 1921. Specific reference was being made to the cost under account Number 412 which is maintenance on the steam plant. The sum represented by that account in that year was $17,666 and the unit cost against power sold for that amount of money, against power sold from the steam plant was, in the aggregate, 5.125 cents, which is very nearly twice, certainly 60 per cent. greater than the cost of procurement of power from the Millville Manufacturing Company, which is one of this company's sources of supply. The entire cost set up, the unit cost set up for that year proved to be, the gross proved to be 19.015 cents a kilowatt hour, that is the gross unit cost of energy from the steam plant in the year 1921. That is, by the way, the worst year that it has had. As a matter of fact, this is, however, very nearly one-half of its period of service. It was put into service, according to the record, in 1920 and ran that one year and met with this requirement on maintenance, which certainly condemns the character of equipment in the plant; in addition to the operating cost, which this equipment has shown.

In 1922, by referring to Exhibit P-1 it is found that the output from the steam plant is again in-

creased, averaging for the four months shown, 52.6 per cent. of the entire available power for the period represented in 1922. The other percentages are, hydro-lectric 35.2 and purchased power 12.2. But in that period of 1922 the lost or unaccounted for power is tremendously high, reaching the value of 31.9 per cent., which is about three times what a fairly well built property ought to show and which is considerably more than twice the years 1917, 1918, 1919 and 1920 and 60 per cent. more in round numbers than the value in 1921. At the extreme right of Number 3, relative to unit costs, we have shown the average cost in order to get at the longest period available to measure the relative cost of power from these three sources. We have set up the average cost from each of the sources, first the hydro-electric, which in the entire period covered, 1917 to 1922, the first four months inclusive, shows an average of 1.612 cents a kilowatt hour; purchased power shows an average of 2.561 and steam plant power shows an average of 8.251.

Q. (By Commissioner Osborne.) That is for 1917 to date?

A. That is the average cost during its entire performance, to show where that cost stands. It might be noted that in our own section, I live in Swarthmore as I have said, and in our house in which the consumption is not over thirty or forty dollars a year, our first step rate is one-quarter cent cheaper than that average cost. We pay eight cents for the first few kilowatt hours—I do not recall just how many—and it drops after that to seven and then to five. I am speaking, understand, not of a factory, but of a small private house, our family having only four in it, not a large consumer, and in a rural district; that is cheaper than the average cost of power from this steam plant after the plant has been in operation, supposedly a new plant, newly built, apparent-

ly new; valued as new built in the valuation set up. Those citations and comparisons which have been offered are samples of the character of comparison which may be made almost ad lib between the steam plant cost and the purchased power cost. I only offer that as a sample of the character of comparisons which it is in the wood to make and they might be made for practically all of the accounts shown.

It may be observed that in 1922 the output of that plant—it certainly cannot be charged up against low output, because it has had 52.6 per cent. of the total power required, it has supplied, I should say 52.6 per cent. of the total power required. Reference to P-1, curve A, that is the other exhibit, marked A, that is the top curve, will show for 1922, the extreme right hand of that curve, right over the year 1922, will show the output of that plant was very nearly what it was in 1920. May I show you that sir; that is the point I am speaking of, that is the generated power in that plant,—pardon me, that is the total power generated, total power generated; it is not the power generated in that plant. Curve H, if you will refer to that, shows the power generated in that plant, and I will read the figures, if I may, 1,285,580 kilowatts, which is larger than produced in 1920, which was the previous largest year; that is the first year it ran, I may add, parenthetically, these 1922 values are extended from the four months data, but the rate at which it has performed there is, as I have stated, higher than it has previously performed and certainly it ought to show some economy.

Referring to costs other than production, for a moment, before leaving Exhibit P-1—

Commissioner Osborne: P-1?

Witness: P-2, I beg your pardon. That is the unit cost, Exhibit P-2, Number 2 in this exhibit shows that distribution cost and costs

other than production have climbed up materially from the earlier days of 1917, 1918 and 1919. There are two reasons that might be assigned for that; increased output, extension of lines, higher cost of labor. In 1922, however, when retrenchments in almost all lines had been in order and have been more or less continuous, with some interuptions certainly, the values have not shown corresponding reductions. The totals given in Number 2 of Exhibit P-1 are on the four months basis, that is in other words, they are not reduced or extended to cover a year. There was not any need to do that as there was in Exhibit P-1, and therefore these total sums are expenditures for the four months of the year, and it is easy to see they are very nearly half what the previous year was. A better measure of their value is seen when they are set up on the unit costs basis, that is this total sum divided by the amount that was sold and there it is seen that there is a very great increase in the overhead.

One more reference in regard to P-1. I have shown there the rates which have been imposed for the years shown. They are shown right above the unit cost and to the same scale, 1 cent equally 1 centimeter, and I have only shown what we call the first and second step rate. In some of the schedules there are only two steps. The schedule which applies to the general public the most, namely, schedule A, which is residence, office, professional and club lighting, as it is called, the two steps, the first and second step rates are respectively 12 cents and 10 cents, after a certain amount of consumption at 12 cents the rate becomes 10 cents. That, of course, is common practice in rate making. May I add, those are net rates; they are not total rates from

which a percentage reduction is made for prompt payment, but these are net rates and that rate, it may be seen, just where that stands with respect to the total operating costs here, very liberally above it until shortly after this wasteful steam plant came into use. In February, 1921, it is shown approximate to scale here, although horizontal spaces are not intended to represent the months, but the apportionment for 1921, this would be about February 1st; these rates were increased to 19 cents gross per kilowatt hour, the first step, with 3 cents off, namely 16 cents net and the second step 2 cents below that or 14 cents, and that rate is shown up here. That line, by the way I might say, is broken, of course, in order to avoid interfering with the figures that it would ordinarily modify if it were drawn right through it, but the elevation of that rate applied and the continuity of that rate has been maintained right straight through from the time it went into effect, February 1921 until the present time and there is how high it is relative to these unit costs which have been cited and referred to.

Schedule B, which is street and commercial lighting including churches, starts with a net rate of 10 cents and drops to 9 1-2 cents after a certain consumption, which I do not need to try to remember, because it is on the record in the Commission's files, but that continued until the same time, February, 1921, and was increased to the point shown here, 14 cents net for the first step and 13 cents net for the second step. That which influences the business portion of the community supplied by this company, the industrial section of it or portion of it—and Millville is certainly very extensively an industrial town—is the power rate for industrial

power, AP, schedule AP. The first step is shown to be seven cents up until some time between 1917 and 1918, I believe it was, until the end of 1917 or beginning of 1918, at which time it was increased one-half for the first step and 6 1-2 for the next step. That schedule AP, that is to say, the industrial power rate is very much involved in this application. I can read that, I could, but it is not desirable or necessary, it would seem, because it is in the Commission's file, but it will be found that as the consumption increases the power rate goes down, as is commonly done, so as to favor the larger consumer and those successive steps it certainly was not practical to try to illustrate in such an exhibit as this.

Now, a general comment in connection with the report in regard to power cost analysis, production cost analysis, involves one or two matters which I will try to cite very briefly. In the first place where there are several sources of power it is proper and desirable and necessary for reasons which all engineers know and which everybody else, I think, would know on careful thought, that it should be possible to combine the several sources into one combined source, into one complete source and feed from that into the required channels of consumption. But in this case we have just exactly the opposite extreme from that. At the present time it is not possible, it is stated to be impossible, and it is not the procedure, to synchronize together the various sources of supply, they are all alternating current, 60 cycle, nominally at least, and each one of them has to be routed through the various channels of switches and circuits, as you might say, subdivided groups of the entire load of the company.

Commissioner Osborne: I thought you said

they were all concentrated in the hydro-electric plant.

Witness: They are not concentrated, I may not have made that clear. They all reach there and are distributed from there. That is the thing that I intended to say and that is correct; they are distributed from there, but there are two busses on the switchboard of the hydro-electric plant which, I am told, they designate as A and B buss, as it is common to do and there are nine switches on that board. I have a photograph of it, which I would like to offer, if I may. It is the switchboard and the switches are numbered there; the actual numerical succession there not necessarily being that used by the company, I cannot say that they are.

Commissioner Osborne: Call this P-3.

(Photograph of switchboard and switches, received and marked Exhibit P-3.)

Witness: But as they are numbered there the purpose for which they are used is as follows: Number 1 is street lighting, Number 2, east side commercial; Number 3, west side commercial; Number 4, 150 HP pump; Number 5, 150 HP pump; Number 6, station lighting; the remaining three switches are power source switches, Number 7 is the switch throwing the steam plant to one of the other of these busses; Number 8 is the switch throwing the hydro-electric plant, connecting that up and Number 9 is the switch connecting what the operators in this plant call the bleachery, that is the power house, power supplied by the Millville Manufacturing Company. These switches are so arranged that two of them can be thrown in at a time, one to the upper buss and the other to the lower, but I am told it is not possible to syn-

chronize those. I am sorry to say I do not have additional copies of that right now. We endeavored to get them enlarged, but were not very successful. I will have additional ones made and supply them. They are nothing but photographs, which I imagine you are already familiar with. That means that the two sources which may be in service there might not, either one of them, be well loaded up. That load works very strongly against economical operation even if the steam plant were operating at a cheap rate of production cost, which we have shown it certainly is not doing. A very difficult feature, fundamental difficulty, which may be set apart as a separate difficult is the question of labor cost. There isn't any serious reason why if the steam plant had to be built it should not have been built at a location where one labor organization could handle it. If there is any such reason it ought to be overcome. As it stands at this time the labor cost in the hydro-electric plant, as I have shown is something over—is around 1 cent per kilowatt hour. The 1921 figures I used in this particular instance because they are more nearly modern as to cost of labor and general costs, and the labor cost in 1921 is shown as 1.26 cents; the labor cost of the steam plant is shown as 1.205 cents. The sums of money in both of these cases are shown in this exhibit graphically, Exhibit P-1. The actual figures for the hydro-electric plant are $5531 and of the steam plant $4151. From that it is seen that $5000 amounts to very nearly in round numbers 1 cent in the rate, that is, at that amount of current produced as there is in these two plants. As a further illustration of the character of these plants, there are three additional photographs which show how this water

plant, or rather this hydro-electric plant—this would be, I presume P-4, that refers to the hydro-electric plant and the black lines on there—

Commissioner Osborne: P-4.

Witness: Yes sir.

(Photograph showing rear of hydro-electric plant received and marked Exhibit P-4.)

Witness: The black lines on there indicate the line of demarcation between the electric portion of that plant and the water portion of it, those being of course not necessarily architecturally minutely correct, but showing how the compartments of that plant are in fact, or rather the rooms in that plant are in fact divided up.

Commissioner Osborne: Do you want to offer the other two?

Witness: Yes sir. I have a view of the back of this plant, of this hydro-electric plant which shows, you might say—which is 180 degrees apart, that is, opposite from that picture showing the front view, which helps to illustrate further how that water plant is divided.

Commissioner Osborne: This picture which you say is the front view is marked "Rear."

Witness: I beg your pardon; that is the one I was looking for. That is P-4. P-4 shows the rear of the plant. P-5, if I may, will show the front of it.

Commissioner Osborne: The picture said to show the front is marked P-5.

(Photograph showing front of hydro-electric plant is received and marked Exhibit P-5.)

Witness: The black lines on those photographs show the outlines of the separation between the electric and water parts we might say, of the property. I believe it is all actually

in the electric company's valuation, but those parts indicated as water are used by the water company.

Commissioner Osborne: By the water company; that is a different company?

Witness: Yes sir, it is.

Commissioner Osborne: You have not mentioned it.

Witness: It is one of the companies managed by this same personnel. There are really three companies there, water, gas and electric and this water company is really sandwiched right in almost like the right hand and left hand with the electric company.

I have referred to the purchase of power from the Millville Manufacturing Company and to illustrate the location of that in a pictorial way I offer that picture which shows only the stack of the Millville Manufacturing Company's power plant from which purchased power is procured.

Commissioner Osborne: P-6.

(Photograph showing stack of Millville Manufacturing Company's power plant received and marked Exhibit P-6.)

Witness: The purpose of that is simply to show that it is quite near by.

Mr. Starr: What was that last? I did not catch the last word.

Witness: Near by.

Commissioner Osborne: Do you want to see the photographs? I suppose you are familiar with the plants?

Mr. Starr: I have never seen the plant. I will take his word for it as to its appearance.

Witness: The steam plant, these photographs are here, there are three views of the

steam plant, exterior and one of the interior of it, which will show the character of building which it is.

Commissioner Osborne: The three views of the exterior if offered in evidence will be marked 7, 8, 9, the interior 10.

(Three photographs showing exterior of steam plant received and marked Exhibits P-7, P-8 and P-9 respectively.)

(Photograph showing interior of steam plant received and marked Exhibit P-10.)

Witness: A further consideration of the cost of power from these various sources, particularly from the two owned by the company, involves what might be called overhead cost, indirect cost, such as general expenses, salaries of general officers and general and miscellaneous expenses. In view of the fact that these three companies, gas, water and electric companies, are managed by the same organization, operated by the same organization and, in fact, from the same office and in some cases in the same plant, as I have just shown, led me to determine what the cost, what the amount of the overhead cost has been for the other two companies so associated with the electric company. Account 481 for the electric company in 1921, that is salaries of general officers, was $3,223.08 and general miscellaneous expenses for the same year were $944.27; total for the electric $4,167.35. For the gas property, general officers' salaries $3,743.77 and general and miscellaneous expenses $2,116.09; total $5,859.86. For the water, administrative expenses $5,219.70, miscellaneous expenses $502; total $5,722. Total for the three for 1921 $15,749.33. That is what might be called the overhead charge and it

would seem that in a community of this character that three companies, which in many cities are operated all under one head—we have not only scores, but hundreds of gas and electric companies under one management—it would seem that there would be certain economies resulting from such management.

Commissioner Osborne: That is not so in this state.

Witness: That is gas and electric?

Commissioner Osborne: The same corporations do not ordinarily operate the different utilities. The question here is whether the overhead you now mention for this company is too high for this company.

Witness: Yes sir. The fact is offered for what it may be worth. It shows a grand total of those intangible expenses that run into considerably over $1,000 a month, I mean to say for three years, 1921, 1920 and 1919.

Q. (By Commissioner Osborne.) Your theory is $15,000 is too high for the operation of three utilities of this character.

A. For such an account, yes sir. For those accounts, yes sir.

Q. What is your theory as to this particular apportionment of that sum to this company?

A. I feel the apportionment of it to this company is high.

Q. You think you could run a utility like that for less than thirty some hundred dollars?

A. Of course I am not separating in my mind—I mean to say I am not separating the idea that it is run in conjunction with other corporations, managed and operated right by the same personnel and supplying substantially the same consumers, and so on. I am not separating that fact in my mind, because that is a fact.

Q. Suppose they were run by different people.

A. Entirely separate, across the street, no contact whatever?

Q. Yes.

A. Even then I would not feel that that much was warranted.

Another item of the same character is general amortization. In 1917 the amount shown for that is $7,834, for the year 1917. It has run along on a basis corresponding to that for the entire period. In 1922, that is, when I say corresponding I mean to say increasing by various steps, until in 1922 it reaches a value in the four months alone, general amortization $3,295.83.

Q. (By Commissioner Osborne.) For four months?

A. Yes sir.

Q. On which plant?

A. General amortization on the property.

Q. All plants?

A. On the property, yes sir. That would be about $9,700 for the year, of course. It is $3,295. The legend relative to that account in the report of the company, I would like to just refer to it a moment, page 27 of the Annual Report—I have it for all the years referred to in my discussion, which is from 1915 to 1920, and in 1915 it says: Charge to this account quarterly amortization calculated on the basis of property values as of the beginning of the year at an annual rate of 10 per cent., less the value of repairs made during each quarter. That immediately leads from the question of the bare bones of production, which we have been discussing briefly here and which we present complete data on here for the entire period into those accounts which bring us really into contact and into association with valuation, because in the first place there is the 10 per cent. and the second idea of capitalization. Ten per

cent., even in a very small plant—if I may I will go back a minute—that is 10 per cent. continued for 1916, I have read it for 1915, it continues to 1916. For 1917 the wording is slightly different, but the 10 per cent. is the same. For 1918 the wording is again slightly different, but the 10 per cent. is the same. For 1919 the change is made of charging the amortization off in monthly amounts on the basis of property values as of the beginning of the year and at an annual rate of 10 per cent. less the value of repairs, so the only change is it is charged off monthly instead of quarterly and the 10 per cent. is still the same. But in 1920 is the first time it has dropped to 7 1-2 per cent. and from that amortization has been deducted such repairs as I have already read and have been made, and of course therefore, it is not always the same amount. It is the same set up, the same account set up from which is deducted whatever repairs are made. It is not clear how it has been handled in the year 1921, because in that year in which the steam plant ran there is a repair bill, which is on the steam equipment of over $17,000, $17,600 and some dollars. But that account is too high.

Q. (By Commissioner Osborne.) What do you think it should be?

A. Well, based on the life and performance and period of service and so forth of the equipment which forms an electric plant, provided it is equipment which is in proper condition when it is put in, maintained so, a maintenance account for so doing, for taking care of that requirement is set up, not over half that at the most.

Q. Five per cent?

A. At the very most, certainly five; 3 1-2 to 5. There is another item which brings us in contact with the matter of valuation also which I would like to cite at this time and that is the matter of interest

deductions. These have aggregated $64,281 from 1915 and these are what might—what are called other interest deductions. If I may refer to the income report I can give the account number for it if it is here.

Q. (By Mr. Miller.) What year is this, Professor?

A. I will tell you in a minute. I am referring to account 512. 511 is stated to be interest accrued on funded debts and 512 is other interest deductions. That is apparently interest on a long string of obligations which were incurred, I presume, in the building of this steam plant.

Q. What kind of obligations are they, do you mean bonds secured by mortgage or just notes, promissory notes?

A. My understanding is they are just notes. The total amount of that interest, however, is as I have stated.

Q. Can you give the total of the notes from the report before you?

A. I do not believe I can from this report here, no sir. Let me think a minute and see if I have it any place. I can locate that for you at a later time, if I may.

Mr. Miller: I would like the Court to understand, if your Honor please, the facts about the notes, because the capitalization of this company is in a very unusual situation. I understand the capital stock is $50,000, funded debts $2,000 and there has been issued a series of notes, not authorized by the Board, on the theory they were short term notes, but which appear to be rather long term in the sense that they have been outstanding for a number of years, and there is no apparent means of funding them and a legal question may arise whether your Honor will be willing to concede to this

company a revenue on that class of capitalization.

Witness: I am unable to locate any action by the Utility Commission of New Jersey authorizing this company to float securities for such construction work as this steam plant. There may have been such, but I do not know of any, have not been able to find any and I do not know of anybody who does. It is my understanding that of course these securities have not been floated exclusively for the purpose of the steam plant alone, because extensions have been made to the remaining parts of the plant.

Mr. Miller: That might be another question. The present question is if you can find it from the report, what is the amount of the outstanding promissory notes?

Witness: There is a long list of notes, several score of them, aggregating two or three hundred thousand dollars.

Q. At what part or table in the report do you find that; can you give the number?

A. I do not believe I can right now. Can you?

Mr. Betts: Page 9, line 8, also page 48, testimony of October 26th, 1920.

Witness: There is where I noted them; I had not noted them here. The sum set up in line 8, page 9 for 1921 is $277,399.52. Some of those are to a concern which is called—there are notes to all events, I will put it that way—which is called the High Pressure Construction Company. That is again one other limb of the organization here which is not a utility, but which does all, or which is stated to do, at various overhead profits and so on, the construction work for this company. But the personnel

of that organization is the same as that of the gas, water and electric company and we find the profit to that company on some of this construction work has been as high as—I give the highest first—33 per cent., plus 7 per cent. on material and labor. That is quite unheard of.

Q. Let me ask you who is the General Manager of the High Pressure Construction Company?

A. I think Mr. Franklin is.

Q. The people who are in the office.

A. I have the officers of all of those companies. I think I can tell that. The High Pressure Construction Company; did you say the President?

Q. No, General Manager.

A. Well, in 1921 and the preceding year both, the reports to the State are signed by Mr. Franklin, as General Manager, yes. He is referred to in the Dey & Zimmermann report as the Engineer of that company.

Q. Are there any other officers' names; have you the names of the other officers?

A. Of the High Pressure Construction Company?

Q. Yes.

A. Walter Wood, President; Walter Wood, Treasurer; Walter Owen, Secretary.

Q. Who is the Treasurer of the Gas Company and the electric light company? Just give the officers of both those companies.

A. Well, the electric light company first—

Q. And the gas company too.

A. The President did you ask me?

Q. The officers, yes.

A. In 1921 the report states William C. Buell as President; Walter Wood, Vice President; C. N. Nixon, Secretary; Walter Wood, Treasurer. S. J. Franklin, General Manager. Correspond with S. J. Franklin.

Q. That is the electric light company you just gave?

A. Yes sir. That is the same in 1919 except that Mr. Reeves, C. C. Reeves was Vice President in 1919, but Walter Wood was Treasurer.

Q. Mr. Nixon is an employee in the office?

A. Mr. Buell and Mr. Nixon both are employes, so I understand.

A. The High Pressure Company is carried right on in the electric light office?

A. Yes, I understand the employes out on the line do not know whether they are working for one company or the other, that is, the Auditor of the company or the bookkeeper of the company actually apportion the time to one or the other. That is the reason those amortization charges we were referring to, your Honor, in the general overhead things, are not capable of being set up at this time until I have had a little more chance to go further into the valuation, the report on that valuation by Dey & Zimmermann. A revised report was made some time ago, this spring, I believe and I have had it for some few days, a little over a week and it is a very extensive report. I have made certain analysis from it which indicate the need of a little more than superficial care in making a reply to it. It shows a total of tremendously high unit values. When I say unit I mean in terms of power sold. As I said this morning the return or the payment of the entire cost, whether it be capital cost or production cost or anything else, has got to be made out of the commodity that is sold and for that reason in order to see where the sum of these values would land us I made an effort to separate and did separate—

Q. Professor, will you just lay that aside for a moment until we finish the interest. On what amount of notes does the company claim credit on its income account?

A. How is that? I did not get that.

Q. In the income account, deductions from gross income on account of interest, how much does it claim in money?

A. In what year, sir?

Q. The year you gave us, 1921, I think?

A. In 1921, $16,740.

Commissioner Osborne: Interest?

Mr. Miller: That is interest on these notes.

Witness: I will just check that to be sure, if I may. I would like to be real sure about that. Account 512 which is said to be other interest deductions, in 1921 is set up as $16,740.-74, and that is what I said before. In 1922, for the four months of 1922 the same account shows $6,056.11, or at the rate of about $18,000, which is quite a little more than $16,000. The aggregate sum of that interest has been $82,449.87.

Q. Can you tell the origin of these notes that were outstanding in 1921, that is, when did they first appear; can you tell that from the Antecedent Report?

A. I am not sure about that, but I will see. To answer your question, probably the most proper way to answer it and the quickest way to answer it is to state that in 1915 the amount of what was called "Other Interest Deductions" is $909.09.

Q. What year?

A. 1915, and that is stated to show an increase from the previous year of $199.33, which means that there was a small increase there.

Q. Read the same item for 1916.

A. For 1916 the other interest deductions are stated to be $812.85 and the purpose of that is said to be interest on notes and open accounts and that shows, is stated to show a decrease of $96.24. Now, in 1917 is when the large bulge takes place.

Q. Give us the rest of the years.

A. $7,008.56, which is stated to be an increase of $6,195.71. In 1918 there is another bulge, which is $11,560.46, stated to be an increase of $4,551.

Q. Let me ask you; you said you were the City Engineer, Electrical Engineer of Millville in 1918 didn't you, and had been then for a number of years?

A. Yes sir.

Q. You had supervised for the City the construction of this electric light distributing system which was to supply the City with electric light, street lighting, hadn't you?

A. I did not say I supervised it.

Q. You saw it built and reported to the City.

A. Yes, I was the City Electrical Engineer and had to do with that work as its engineer.

Q. Isn't it true the electric light distributing system which they contracted to furnish the City had been completed by 1918?

A. Substantially so, yes sir.

Q. Well, completely so, isn't that true?

A. Yes, from the engineering standpoint, absolutely so. There might have been a door knob to put on yet.

Q. If there was any great increase or bulge, as you call it, in the issue of these notes for 1917, the construction of the new electric light distribution system in Millville had nothing to do with it, did it?

A. Certainly not directly, I would say.

Q. Or indirectly?

A. According to my information it is entirely due to this, it is largely due—

Q. Never mind, it was not due to that fact, was it?

A. Certainly not.

Q. Now give us the figures, the notes for 1919.

A. 1919, the interest charge set up there is $12.-

533.86 and it is stated to be an increase of $973.40.

Q. Give us the figures for 1920.

A. For 1920, $14,716.11 stated to be an increase of $2,182.25.

Q. You are giving the amount of interest now, aren't you?

A. Yes sir.

Q. These are not the notes, they are the interest on notes.

A. This is the interest that is charged up against these operating expenses. The aggregate of that is—

Q. Now give us the interest for 1921.

A. $16,740.74, stated to be an increase of $2,024.63. Besides which on all of these years, all of the years since 1917 inclusive there is another, interest accrued on funded debts, of $120 each year. I have not considered that, because my understanding is from this note here—

Q. What is the capital amount of notes, the aggregate amount of notes in 1921?

A. I am reading from page 9, line 8, which is headed "Account 207," bills (notes payable) $277,399.52.

Q. How many of these notes are held by the High Pressure Company?

A. Sir?

Q. Can you tell how many of the notes are held by the High Pressure Company?

A. I will see if I can. I cannot from these reports, no sir.

Q. Do you know?

A. I have noticed a statement relative to that in the Dey & Zimmermann report, if I may be permitted to seek that out.

Q. Please refer to it now while we are on that topic.

A. I will see if I can find that.

Q. Also from the same source of information read into the record the names of the holders of all these notes.

Mr. Starr: I suppose you will make the Dey & Zimmermann report part of this record by the cross-examination of this witness.

Mr. Miller: I suppose it is part of the official record.

Mr. Starr: I want to have an understanding about it.

Mr. Miller: You mean, I refer to it to show the truthfulness of it?

Mr. Starr: You examined the witness on the Dey & Zimmermann report; it seems to me if that is so it should be in evidence.

Mr. Miller: I will use that part of it and offer in evidence the admission by the company that they have these notes outstanding, and the holders' names. I will not offer it for any other purpose now.

Commissioner Osborne: Any question about it?

Mr. Starr: As a strict legal proposition, if your Honor please, if this witness is permitted to refer to, testify about the Dey & Zimmermann report and refer to it, the report should be considered in evidence.

Commissioner Osborne: I suppose the report as a whole is something that must be considered as a whole, therefore you are strictly speaking correct. What you want to know now is whether certain outstanding notes exist.

Mr. Miller: If your Honor please, of course we do not know.

Commissioner Osborne: The books will show what the obligations are.

Mr. Miller: It is possible we may show this —they are claiming, I suppose, that they are entitled to consider the capital of the company and the amount of the capital stock issued and outstanding, plus funded debt of $2,000, plus this large issue of outstanding notes; suppose those notes were in the hands of themselves?

Commissioner Osborne: That depends on whether the Commission allows them to consider them as capital.

Mr. Miller: Indeed it does. In order that your Honor may know I would like to read who holds them. It may appear they are in the hands of themselves. The High Pressure Company may develop to be nothing but the Electric Light Company.

Commissioner Osborne: Does this witness know? Ask him if he knows.

Mr. Miller: About the interest?

Commissioner Osborne: Who holds the outstanding notes?

Witness: My recollection is they are to Walter Wood in part and in part to the High Pressure Construction Company, controlled by Walter Wood.

Q. What is your answer to that?

A. My recollection is they are stated to be notes drawn in favor of Walter Wood in part and that they are in part to the High Pressure Construction Company which is controlled by Walter Wood. That is my recollection, but if I may be allowed to check it up here, I will try to do it as speedily as

possible.

Q. (By Commissioner Osborne.) Does it appear on the books of the company?

A. I do not recall finding it on the books of the company.

Commissioner Osborne: Why don't you call on them to make a statement on the subject, if it is a matter of record in their books; there is no use of wasting any time on it.

Mr. Miller: We had the same thing up two years ago; we had quite a struggle, we got them in. I had to subpoenae the original books.

Commissioner Osborne: There is no reason for any subterfuge about it. If they cannot come across and show who has them and that they hold them properly, they will not be considered as being in existence. They have to make a declaration on the subject sometime and they might as well do it now as well as any other time.

Witness: Perhaps Mr. Marsh can tell me where I could find it, if they care to.

Commissioner Osborne: Don't the reports that they file with this Board show?

Mr. Betts: They do not show who they are held by. They show the amounts.

Commissioner Osborne: All you have to do is to call for the production of the papers, books, whatever is necessary.

Mr. Miller: I did before, I subpoenaed a whole lot of books.

Commissioner Osborne: I mean now, right now in this case. It will not take me five minutes to find this out. If we cannot find out in five

minutes that will be the end of it; it will be wiped out.

Mr. Miller: What is the situation?

Mr. Starr: With one exception none of the notes are held by the High Pressure Company. They are all held by Walter Wood. Is that right?

A voice: Yes.

Mr. Miller: I will take it from you if you say you know. I will not stand for that.

Commissioner Osborne: What do they amount to?

Mr. Miller: $277,000.

Commissioner Osborne: Does the High Pressure Construction Company hold any of them?

Mr. Starr: I think not, sir. Mr. DeHuff, the Accountant, says not.

Commissioner Osborne: Does Walter Wood hold any?

Mr. Starr: $275,000 as of December 31, 1921.

Commissioner Osborne: Were they originally issued to the High Pressure Construction Company?

Mr. Starr: I think they were, sir.

Commissioner Osborne: I will tell you what you do; you furnish me with a list of these notes.

Mr. Starr: Sure.

Commissioner Osborne: Their history, showing who they were issued to originally and in whose hands they are now and the amount of them.

Mr. Starr: We will do that. I think it is in the record somewhere.

Commissioner Osborne: And what they are for.

Mr. Starr: Yes. That matter was thoroughly investigated at the last hearing.

Commissioner Osborne: They changed hands in the meantime.

Mr. Miller: There was an investigation once and this Board ordered the High Pressure Company ousted from the office of this company, but I have not seen them ousted as yet.

Commissioner Osborne: I do not know anything about that.

Mr. Starr: That is not a fact. You know that is not a fact at all.

Mr. Miller: What?

Mr. Starr: Ousted from the office.

Mr. Miller: The report said they would find a way to make you get out of the office. I will produce that. In the gas case.

Commissioner Osborne: Take notice now that you are to furnish this information between now and the next hearing.

Mr. Starr: We will do that, sir.

Commissioner Osborne: We haven't time to quibble over such a simple thing as that. Time is too precious, yours as well as mine.

Mr. Starr: We will do that.

Q. (By Mr. Miller.) Now, Professor, we have settled the amount of the interest charges. You took up that factor, the payment of the interest and in

connection with it you said the High Pressure Company did some work for the Electric Light Company for which it received notes. What kind of work did it do if you know?

A. My understanding is this construction work is by employees of the light company, but every time it is construction work they take a percentage on it. that is, just the same men, the same personnel and the same everything, they go on and do work for the lighting company, just the same as in many lighting companies they do it without any High Pressure Company tied in at all. That is not at all unique, it is quite common. But whenever they do construction work, that is called high pressure, set apart from their account, as High Pressure Construction Company and a percentage added to it.

Commissioner Osborne: Are you through?

Witness: Yes, until I have a chance to go a little further into that report of valuation.

Commissioner Osborne: Do not start anything today that you can't finish.

Witness: Then I am through.

Mr. Miller: Does your Honor sit until five o'clock or four?

Commissioner Osborne: Not until five. You finish with him as far as you can today. There are some aspects of his testimony he just indicates that he cannot finish today and he would rather not go into. You finish up what you can today and we will take an adjournment.

Q. How do you know the High Pressure Company made a profit as high as 33 per cent. on some of this work?

A. That is information supplied to me by Mr. DeHuff.

Q. Who is Mr. DeHuff?

A. Mr. DeHuff supplied that to both Mr. Carver and myself on the occasion of our being there various times, sometimes two or three days and once only one day. Mr. DeHuff, I think he is the Auditor or Chief Accountant; I do not know just what his actual title is.

Q. Did he say that these notes were issued, these notes aggregating some two hundred thousand dollars were largely issued as compensation or pretended compensation for work of that class, that is, that sort of work?

A. I made an inquiry of Mr. DeHuff about the notes once or twice, but in the pressure under which we were working I think he must have overlooked it, something of that kind; I did not get any clear reply on it. I have no information from him relative to them that I have in mind now, but I have found it in the records, in the Commission's records here in various cases in which this company has been before this Commission.

Q. You have learned the history of them in that way, these notes?

A. Yes, but the profit I learned from Mr. DeHuff. He told me about that, Mr. Carver and me.

Q. These notes were given for that class of so-called contract work done by the High Pressure Company for the Electric Light Company.

A. I would not attempt to answer that, because I do not know.

Commissioner Osborne: Doesn't all this appear on the books of the company? These transactions must all appear on the books of the company. Certainly they must if they expect to have them the basis—use them as the basis for capital, rate making basis. They cannot put anything in there they cannot substantiate. If it is there we will see it.

Mr. Miller: I think you are right.

Commissioner Osborne: The most direct way to get at it is to call on them to produce the books.

Mr. Miller: I think I will throw the burden on them.

Commissioner Osborne: Of course they will have to produce the books. If there is a construction company that is making an inordinate profit by reason of peculiar relations, that matter will be looked into and naturally without any difficuty whatever. We have done it before and we will do it again. There need not be any difficulty about that.

Q. Professor, do you have something in mind you desire to state? If not I would like to ask one or two questions.

A. No, except I have been requested to make a tabulation relative to this and I will do so quickly, as soon as possible and I will also send it, if it meets the Commission's approval to the other people.

Commissioner Osborne: Is that all you have today?

Witness: I think so, yes, except that I have one request to make, if I may. I do not know whether that is in order or not. I want to know if there may be—if this report of Dey & Zimmermann is in the record or if it is going to be in the record, if I may be supplied with a copy of it. I need it in connection with my work. I have been loaned a copy by your Engineering Bureau in Newark.

Commissioner Osborne: I do not know what it is, whether it is going into the case or not. It cannot go in without proof unless by consent.

What is the Dey & Zimmermann report referred to?

Mr. Starr: It is a report made by Dey & Zimmermann, employed by the company to appraise the value of the property.

Commissioner Osborne: Have you any objection to its going in?

Mr. Starr: We expect to put it in.

Commissioner Osborne: Have you any objection to its going in?

Mr. Miller: I have at present until I know a little more about it.

Mr. Starr: It seems to me it is in the case now, the way the examination has gone.

Commissioner Osborne: I do not think the examination has gone far enough to put it in the case.

Mr. Miller: Can I ask the witness one or two questions?

Q. (By Mr. Miller.) What did you say was the cost of generating current per kilowatt hour at the hydro plant?

A. In what year?

Q. 1921.

A. In 1921 the cost of production in the hydro-electric plant—that is your question—was 1.703 that is the net cost.

Q. What did it cost this company to buy the electric current from the Millville Manufacturing Company per kilowatt hour in 1921?

A. On the basis of current purchased, 3.017; on the basis of current sold, the purchased current which was sold, 3.586; about twice what it did from the hydro-electric.

Q. What did it cost this company to produce

electric current per kilowatt hour at the steam plant?

A. In 1921?

Q. 1921.

A. This is the gross cost 19.015 cents.

Q. More than 19 cents per kilowatt hour.

A. That is gross. The net cost was 10.995. That is 2 cents more than I buy it for myself. The average cost for the entire period the steam plant has been running is 8 1-4 cents.

Q. Professor, referring to the report of the Utility Commission in 1919, which is the last one I find, there is stated the cost of current per kilowatt hour of various companies; for instance Hammonton 2 cents and a fraction, Millburn is 1.45 cents, Cape May is—

Commissioner Osborne: What are you going to do, put in the statements of other companies?

Mr. Miller: I want to ask him why it cost so much as 10 cents to produce this power at this steam plant.

Commissioner Osborne: Why does it cost as much as 10 cents to produce this power at the steam plant?

Witness: On account of the condition of the equipment; it is not economical, most decidedly uneconomical; getting to be very much antiquated, it is an old reciprocating engine and boilers.

Commissioner Osborne: I take it your whole testimony today has been devoted to a criticism of the result of the operation of this steam plant.

Mr. Miller: Yes sir.

Commissioner Osborne: Can you tell us briefly why the steam plant is so uneconomical

and what kind of a plant should be operated, if you can?

Witness: The steam plant, the reason for the lack of economy in the steam plant is, as far as I can tell you, as I said before, the condition of the equipment. The engine which is there, according to the company's own statement, must be taking from 40 to 50 pounds of steam per kilowatt hour. A turbine would take considerably less than half the maximum of that, and if it was a well arranged turbine it would take less than half, not more than 18 to 20 pounds.

Commissioner Osborne: You mean the machinery is obsolete.

Witness: Yes sir.

Commissioner Osborne: Was it new machinery when the plant was built, or old?

Witness: No, sir, very old.

Q. (By Mr. Miller.) How old is the plant itself, when was the plant erected?

A. This plant was erected, belted in in 1920. It has been erected for the last seven or eight years, according to the interest charges.

Q. Why do you say the machinery was old if it was built in 1920; do you mean they put in second-hand machinery?

A. Yes sir, not properly designed. I mean to say the plant itself, the construction is not properly handled.

Q. What part of the machinery is second-hand?

A. Well, the main part of the machinery is the boilers and the engine and generator and they are all second-hand

Q. (By Commissioner Osborne.) What part is obsolete?

A. The engine, which is the corn crib of the plant, apparently.

Q. (By Mr. Miller.) How about the boilers, are they all right?

A. There has been a maintenance cost on the boilers and an additional capital cost since they were put in of upwards of eight or nine thousand dollars. That has to do with the valuation which I had expected not to make any report on. I can answer that, however.

Commissioner Osborne: You will come to that aspect of the matter when you reach the valuation.

Witness: I had expected to do that.

Commissioner Osborne: What is the best type of modern plant?

Witness: The very best plant that they could build would be the type they have been buying power from right there within a few hundred feet of where they are, and that is the plant that they have at the bleachery as they call it, the Millville Manufacturing Company; a steam turbine plant working condensing if isolated, or in the case of the Millville Manufacturing Company with steam used in the process, and therefore not condensing; a separate plant should be a condensing turbine plant.

Q. How long has a turbine plant been considered as the most modern type of plant?

A. Ten years anyhow.

Q. Then it was so considered when this present plant was built?

A. Oh, my yes.

Q. How much would it have cost to put in a modern turbine plant?

A. I would like to give that, if I may, with the—

Q. In a general way.

A. It would not have cost as much as there is set up for the value of this plant here, and this plant could have been pensioned off.

Q. (By Mr. Miller.) Well, give the cost of it.

A. Around $50,000, $75,000.

Q. (By Commissioner Osborne.) Your criticism of this result is that instead of building a modern type plant they used obsolete, second-hand machinery?

A. Absolutely.

A. And produced a plant at great expense.

A. Yes sir.

Q. The carrying charges upon which are so great that the combined result is a very high cost of producing electricity per kilowatt hour?

A. Exactly. It uses a large percentage of the current produced itself. There is a capital charge of 20 cents per kilowatt on that plant. On a 10 per cent. basis the capital charge on the power coming out of that plant is not far from 2 cents; 19.8 cents and 10 per cent. of that. Power can be produced in a good turbine plant for that money.

Q. (By Mr. Miller.) Is that all?

A. That is all.

Q. (By Commissioner Osborne.) Is it possible with the water facilities at hand to increase the capacity of the turbine there?

A. The hydraulic plant?

Q. The hydraulic plant.

A. They could answer that better than I.

Q. You don't know? If you don't know say so.

A. I don't know for sure; I believe there would be a possibility of it.

Q. Then they are buying power as I understand it from an adjoining modern plant for less than they are manufacturing it for?

A. Yes sir.

Q. At their own steam plant?

A. Yes sir. That power can be furnished at a cheaper price today than last year, furnished at 2 1-2 cents when the coal price was $6.00.

Q. (By Mr. Miller.) That was furnished for 2 1-2 cents in 1918 and 1919, was it not?

A. Yes, the average price of the power purchased on the sold basis, the apportionment of sold, is only 2.561 cents, as exhibit P-2 shows right to the right.

Commissioner Osborne: Anything further from this witness?

Mr. Miller: Do you know the cost? I would like to get into the record just that then we will suspend.

Commissioner Osborne: Doesn't it appear on the exhibit?

Mr. Miller: In 1917 what did they pay for the power?

Witness: It is shown here.

Commissioner Osborne: Doesn't that show on the exhibit?

Witness: It will show in my tabulation.

Commissioner Osborne: Doesn't it show under the letter G?

Witness: Do you want the purchase price? That is the average price for all three sources. There are so many sources we had to get the average worked out. You want for 1918 the purchase price?

Q. For 1917, what did they pay then?

A. The price on the basis of bought power was 1.792 cents, bought from the bleachery.

Q. That is what they paid the bleachery for it.

A. That is what they paid for the power they bought. The apportionment of that sold is 2.01 on the sold basis.

Q. What did they pay in 1918?

A. On the purchased basis 2.023 and 2.140 cents on the sold basis, that is the apportionment of sold.

Q. In 1919 what was it?

A. On the purchased basis, 2.02 cents and on the sold basis 2.282 cents, in other words, a little over 2 1-2 cents.

Q. What was it in 1920?

Commissioner Osborne: I think he has told us all this before.

Witness: I thought I had.

Mr. Miller: Did he cover that?

Commissioner Osborne: I think it has all been testified to.

Witness: It is all in and will be tabulated.

Mr. Miller: It is shown on that tabulation?

Commissioner Osborne: No, it is not shown on this tabulation.

Witness: It is shown graphically and the tables I will supply will give it.

Commissioner Osborne: He testified to it earlier in the day, my recollection is, however, he says he will supply the tables showing it.

Mr. Miller: All right.

Commissioner Osborne: Anything further from this witness?

Mr. Miller: I think that is all today.

Commissioner Osborne: You are not going to offer that report? You say you are going

to offer it? The witness desires to have a copy. Have you one now?

Witness: I have one loaned me by the Commission.

Commissioner Osborne: Then you can use that. Will you be ready a week from today to continue?

Witness: Yes sir.

Commissioner Osborne: Will that suit you?

Mr. Starr: I would prefer to have it the following week if you can arrange it, because a week from today would be the 10th and I am obliged to be in Mays Landing on that day.

Commissioner Osborne: I cannot put it down for two weeks. You say you cannot be here next week?

Mr. Starr: No, I cannot be here next week.

Mr. Miller: Couldn't we go ahead a week from today? I know Judge Starr very well—

Commissioner Osborne: We cannot without counsel.

Mr. Miller: This is a public matter pending for years.

Mr. Starr: I know, but I have made arrangements to be in Mays Landing on that date.

Commissioner Osborne: A Court engagement?

Mr. Starr: The opening of the circuit.

Commissioner Osborne: Do they begin to try cases?

Mr. Starr: They begin to try cases; whether

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my case will be reached or not I do not know, but I have made arrangements to be there.

Mr. Miller: I would not like to concede that some private case is more important than this one, because our people think it is important. I have no criticism to make of anybody.

Commissioner Osborne: Of course, being a lawyer you know that if he is not there something may happen to his case.

Mr. Miller: Yes sir.

Commissioner Osborne: A judge is not always as considerate as he might be.

Mr. Miller: There is one thing about this, if your Honor please,—

Commissioner Osborne: The only reason I suggested that date was because it would suit my convenience.

Mr. Starr: I assume Professor Temple would not finish his testimony until he has had an opportunity to examine the Dey & Zimmermann report and arrive at some conclusion.

Commissioner Osborne: He says he can be ready in a week.

Mr. Starr: I did not understand that.

Commissioner Osborne: If you cannot come on the 10th I will have to put it over to the 24th. October 24th.

(Adjourned until October 24th, 1922, at the State House, Trenton, N. J., at 11:00 o'clock A. M.)

New Jersey State Library

BOARD OF PUBLIC UTILITY COMMISSIONERS

Trenton, N. J., October 24, 1922.

IN RE INVESTIGATION OF RATES MILLVILLE ELECTRIC LIGHT COMPANY.

Before:

Commissioner HARRY V. OSBORNE, Esq.,

THOMAS BROWN, Esq., Counsel.

For Millville Electric Light Company appears:
LEWIS STARR, Esq.

For the City of Millville appears:
LOUIS H. MILLER, Esq.

Commissioner Osborne: Are you ready?

Mr. Starr: Yes sir, we are ready.

Mr. Miller: If your Honor please, Professor Temple, telephoned that he is on his way and his car broke down. I believe Mr. Carver is to testify and perhaps it would be well if we go on with him on the stand.

Commissioner Osborne: You may call your witness.

Mr. Miller: Mr. Carver.

H. E. Carver, sworn on behalf of the City of Millville.

DIRECT EXAMINATION

By Mr. Miller:

Q. Mr. Carver, what position do you hold with the Board of Public Utility Commissioners?

A. I am Chief Appraisal Engineer for the Board.

Q. Were you directed to make some examination or inspection of the Millville Electric Light plant for the purpose of reporting on the pending application respecting the rates of that company?

A. Yes sir, I was.

Q. Will you state what examination you made and the results?

A. The results of that examination in part are incorporated in a folder which I have here and which might be marked as an exhibit. This folder contains some references, some comparisons with a report made by Messrs. J. Dey & Zimmermann to the Millville Electric Light Company, which they were kind enough to loan to us, and which has not been marked as an exhibit in the case yet.

Mr. Miller: I suppose that could be received, if your Honor please, subject to the—

Commissioner Osborne: Any objection?

Mr. Starr: To the Dey & Zimmermann report? Oh no. We propose to put it in; no reason why it should not be marked as an exhibit now if any comparison is to be made.

Commissioner Osborne: Any objection to offering the report made by Mr. Carver?

Mr. Starr: No sir.

Commissioner Osborne: Containing in part reference to the Dey & Zimmermann report.

Mr. Starr: No sir.

Commissioner Osborne: Let it be offered and marked.

Mr. Starr: I suppose you have copies for us, Mr. Carver?

Witness: Yes sir. I will give a copy now.

(Folder containing Mr. Carver's report, received and marked Exhibit P-11.)

Witness: This exhibit contains a number of tables, marked from No. 1 to No. 8. The subject matter of these tables is indicated in the index at the front of the folder. I presume I may as well just proceed to explain those tables briefly.

Q. I wish you would do so, Mr. Carver.

A. Table No. 1 shows a comparison of the appraisal made by Mr. C. A. Brickman of Messrs. Dey & Zimmermann with the book costs and the book additions to 5-31-22. This appraisal of Mr. Brickman's was made and submitted in connection with the company's application for increased rates in 1920, I think it was, and also an application for the issue of securities. It is indicated in the foot note at the bottom of table No. 1, the exhibit numbers in those prior cases.

Q. (By Mr. Starr.) Pardon me, Mr. Carver; then the comparison contained in table 1 is not with the recent Dey & Zimmermann report?

A. No, but there are some comparisons later. This is a comparison with the old appraisal made in 1920, which gave the value new as of 12-31-19. At the time that prior case was up, I went over in detail the figures contained in that report, with Mr. Brickman, and I think it was agreed between Mr. Brickman and myself that the figures as given in this table are substantially correct.

Q. (By Commissioner Osborne.) Who did Mr. Brickman represent?

A. Mr. Brickman represented the Millville Electric Light Company. He made the appraisal here, and

an employee of Dey & Zimmermann.

Q. For the company?

A. For the company.

Q. Then the column marked "Appraisal" is Mr. Brickman's appraisal?

A. That is right.

Q. And for comparative purposes, the next column marked "Book Accounts" shows what the property in question cost according to the books of the company?

A. That is correct.

Q. The third column is the difference between the two?

A. Yes sir, that is the difference between the two. I might state that Mr. Brickman endeavored at that time, according to his testimony and as shown by his appraisal, to really make an allocation of the figures as shown by their books, with the proper allowances for some overhead costs that were not shown on the books, but those figures did not include any contractor's profits as such. The additions are shown in detail in those two columns. The depreciation is also taken from his appraisal and from the book cost and I endeavored at that time, and as set forth here, to separate out the values of the hydro-electric plant as it was and the lines as they were constructed in 1915, and the additional construction which was made subsequent to that date. Subsequent to 1915 the company built the steam plant and enlarged their distribution system and street lighting system quite extensively.

Q. (By Commissioner Osborne.) Will you refer to the second item, interest and taxes on preceding; what do you mean by that; "preceding," what does that mean?

A. The preceding item that is in the appraisal, on the $89,000. That separation is made because the

book costs did not have any charge made for interest and taxes, but the appraisal did. Likewise I might take the next item, which is an important one, second-hand equipment installed in the new plant. That was figured in Mr. Brickman's appraisal at its estimated cost new, whereas it was charged on the books at its second-hand value.

Q. Charged on the books at its second-hand value?

A. At its cost.

Q. By that you mean that is what it actually cost the company.

A. That is what it actually cost the company as near as we could determine.

Q. That figure, $18,200, the books show is what they paid for it.

A. Is what they paid for it.

Q. The figure $38,200 is what Mr. Brickman estimated it would cost new?

A. Yes sir.

Q. As a matter of fact, it was not new?

A. It was not new, and it was partly offset by an item shown under depreciation, separating that between the old equipment and second-hand equipment. In other words, he took the cost and estimated the value for the cost new of those boilers and engines.

Q. And then depreciated them?

A. And then depreciated them on the basis of their age.

Q. (By Mr. Brown.) It makes a difference of $13,000 still.

A. It makes a difference of $13,000 still, yes sir.

Q. What about that item of contractor's profits?

A. Contractor's profit shows that on the book cost up to that date there was contractor's profit of $18,000 charged, for which there was no corresponding item in the appraisal, so that the book cost, that

is a plus item for the books. The other comparison shows a minus item.

Q. What did you find, Mr. Carver, as to the reasonableness of that charge for contractor's profit; any basis for it?

A. I have an exhibit prepared a little bit later on that subject. At that time I did not consider that item very much in detail. I considered more the value of the property as shown by the appraisal. At any event it is set out here, showing what the facts are.

Q. (By Commissioner Osborne.) I had not quite finished my inquiry when Senator Brown took up the examination. This second-hand equipment that was installed at the new plant, which one of the plants was it?

A. The steam plant is the new plant. The hydro-electric plant is the old plant.

Q. The second-hand equipment is the steam plant?

A. Yes, sir. The new plant. The second-hand equipment was installed in the new plant. The value new and the depreciation on the same, was estimated, as I stated before on the basis of its cost new presumably as about approximately—well, on the prewar basis, and its depreciation on the age basis. That is my recollection. I do not find in my notes a copy of the manner in which that depreciation was estimated, but from the fact that we went over—from the fact that is the usual way I am accustomed to estimate it personally—

Q. What do you mean "the way?"

A. On the basis of the age and estimated life, that leaves out of consideration any item of obsolescense, except insofar as it may be reflected in the period of life which was assigned to it. Of course, any piece of apparatus may last for fifty years if properly taken care of, but we would not necessarily

use that life in estimating the value of it.

Q. Because of obsolescense?

A. Yes. We might say a reasonable expectancy of life for it might be only twenty-five years.

Q. Useful life in that industry?

A. Yes, and then even then subsequent events might prove that is too long.

Q. You have given us then first the appraisal and the book cost less the second part, depreciation, and that leaves your values as of—

A. That leaves the present value as of December 31, 1919. Those comparisons are as indicated here, the appraisal going a little bit higher than the book figure and the principal reason that it came higher was because of the depreciation reserve that the company had accumulated on their books for the old plant at that time, which I figure is really more than was necessary.

Q. What is the value of this new plant then appraised at; $188,000?

A. No, sir, the new plant is not shown separately in this exhibit. I show that a little bit later.

Q. It says new plant here.

A. By new plant I mean not only the steam plant, but the distribution lines and street lighting equipment, considering the whole business as plant.

Q. Then it has a different meaning here from its meaning up above?

A. Yes.

Q. Second-hand equipment installed in new plant. When you come down here you use the same expression that means something different. Explain what you mean so we will not have any confusion.

A. The second-hand equipment installed in the new plant refers actually to the new steam plant and the new plant referred to under present value includes not only the new steam plant, but the new distribution lines and street lighting equipment, all

the new construction the company had installed since 1915, in which that steam plant was included as part of the total.

Q. Have you made any separation of that new plant, distinguishing—

A. Yes sir, I have, in a table.

Q. —steam plant from the distribution system.

A. Yes sir, I have, in one of the later tables. At the bottom of Table 1 it shows the net additions from December 31, 1919 to May 31, 1922, and that amount is added to both the totals on the basis of the charges as shown on their books, and no additional depreciation has been deducted either on the old property or on the new installation in arriving at the total that is shown there of $292,926 in the first column, and $285,226 in the second column. The last item on the page, designated a deduction to reduce the profit of the High Pressure Construction Company to a maximum of 10 per cent. on the base cost is taken from Table 3, which I will refer to in a moment. The deduction is made here as this is the most convenient place.

Q. The net result of this summarization indicated by the tables on this page is that the appraisal was $292,926 and the book cost as nearly as you could estimate it was $259,702.

A. That is correct.

Q. (By Mr. Miller.) That allows, however, 10 per cent. profit to the High Pressure Company, does it not?

A. That allows approximately 10 per cent profit to the High Pressure Construction Company. That item though, is not entirely all profit; there is some overhead included in there. You will notice on the next table, which is Table 3, which we may as well refer to now—there is no Table 2 in the exhibit—Table 3 is designated tabulation of bills of the High Pressure Construction Company to the Millville Elec-

tric Light Company from November 1st, 1915 to May 31st, 1922.

Q. (By Commissioner Osborne.) What did the High Pressure Construction Company do?

A. The High Pressure Construction Company as I understand it, does the construction work for the Electric Company, for the Gas Company and for the Water Company. I do not think they do any work for other parties.

Q. (By Mr. Miller.) It is operated right in the office, isn't it?

A. It is one of the four companies comprising this organization, and I believe the company's explanation as given to me personally is that they concluded that was a better way to operate the construction work for all of the companies, rather than each company having their own organization and doing it separately. I merely state that for what it may be worth.

Q. (By Commissioner Osborne.) Then this High Pressure Construction Company is a construction company that does the work for the Electric Company and the other companies?

A. Yes sir, that is correct.

Q. On a contract basis.

A. They do it on the basis of cost plus a percentage, which has varied with the different periods of time as shown in this table.

Q. On Table 1 you say that you have reduced the profit of the High Pressure Construction Company to a maximum of 10 per cent on base cost. What did you reduce it from and what was it?

A. I reduced it from the amount as shown on this Table 3, which shows a total for profit and overhead added of $45,577.

Q. What per cent. was that?

A. That was a percentage varying from 25 per cent. to 33 1-3 per cent.

Q. Profit?

A. Profit.

Q. Was the work done by the High Pressure Construction Company for this company done under a written contract?

A. I understand that it was not.

Q. Have you seen any resolutions of the Boards of Directors of these companies authorizing this work or fixing the amount to be paid for it?

A. No sir, I have not. This information is obtained from the bills of the High Pressure Company to the Millville Electric Light Company.

Q. Are these various percentages of profit indicated on the bills which you examined or are they a matter of computation?

A. No sir, I have copies of those bills furnished me by the company on which that percentage is indicated as a separate item on the most of the bills. For the period of 1920 I did not have exact copies of the bills.

Q. Why not?

A. Possibly because I did not specifically request them, but I had other information from which I considered I reduced sufficiently accurate data.

Q. Were those copies furnished you by the company?

A. Yes sir, those copies were furnished me by the company.

Q. And are presumably copies of originals now in their possession?

A. Yes sir. In connection with the bills for 1920, I would like to call attention to a note that is indicated by three stars on the bottom, on Table 3. This note states that the computation is made on the basis of the total gross additions for the year. That is, I have the total gross addition, and I divided that total gross addition between land, services, meter and meter installations as one group and the balance,

because some time during that period I understood at the time this table was made up that the company discontinued the practice of charging a percentage profit on services, meter and meter installations, and also according to my information, no percentage was charged on land; that was bought directly by the company, no construction work entering into that. So for 1920 and for 1921, six months rather—well, for the whole of 1920 and 1921, I figured no profit on services, meters and meter installations. Based on subsequent information I find that the date when the company did discontinue that practice and installed services and meters directly themselves, was July 1st, 1921, a later date than this, so that the actual amount of overhead or profit charged up on the books of the company is possibly $3,000 more than this $45,000 total which I have shown here.

Q. (By Mr. Miller.) Mr. Carver, may I ask a question? Is this allocation of profit made on the books by the same bookkeeper who is the bookkeeper for the electric light company?

A. Yes sir, this is taken—

Q. What is his name?

A. Mr. DeHuff. I do not know just what his title is. He is the gentleman who is in charge of the books. I might say, to answer that question also, that a part of Mr. DeHuff's salary is charged to all of these four companies according to a statement which I have received.

Q. Mr. Franklin is General Manager of the electric light company, is he not?

A. I believe so.

Q. Is part of his salary charged on the books of the High Pressure Company?

A. It is not, according to the statement, which I have.

Q. But he is the General Manager of the High

Pressure Company, is he not?

A. I assume that he is.

Q. Mr. Wood, is the Treasurer of both companies, isn't he?

A. I couldn't say just what position he holds. He is an officer.

Q. This construction company is really operated by the utility companies, they operate together.

A. It is operated apparently by the same organization.

Q. The work is done by the same workmen, isn't it?

A. The work is presumably done by the same workmen. There are among the employees whose time—well, there are a few employees whose time is charged solely to the High Pressure Construction Company on the statement that is submitted to me by the company. Whether there are any more who are engaged solely on construction work for the High Pressure Company or not, I cannot say.

Q. Proceed, Mr. Carver, please.

A. I might call attention to the percentages that are added here. In 1915, 1916, the bills, the percentage was 25 per cent. 1917, 1918 and 1919 the percentage was 16 2-3 per cent. In 1920 the percentage was 25 per cent. for the first six months and the second six months 33 1-3 per cent. For 1921 it was also 33 1-3 per cent. Also for 1921 a charge was made by the company for freight, hauling, and miscellaneous expense, of 7 per cent., which is not shown on this table. That 7 per cent. also included some storeroom charges. So that that amount is not included in this $45,000 shown on this table as the percentage added.

Q. (By Commissioner Osborne.) I do not understand you, Mr. Carver. Take the last item, for instance, by way of illustration, on the bills of 1922 there was added 33 1-3 per cent., then you go on to

say 7 per cent. added on material only for freight, cartage, storage, and so forth.

A. You are referring to Table 4, now.

Q. Weren't you referring to Table 4?

A. I had not turned over to it myself, but it is all the same.

Q. I was trying to follow you on Table 4.

A. Table 4, gives the percentages in detail. I might possibly better state them from this table. I was stating them from Table 3.

Q. Don't leave Table 3, just because I have interrupted you, until you have finished with it.

A. I have practically finished with it unless there is some other question about it.

Q. Then the total charge for these years—

A. The total charge for those years, exclusive of the percentage added—

Q. 1915 to 1919.

A. Is as shown on this table, $45,577.

Q. This table being Table 3.

A. Yes, being Table 3, and as stated a moment ago that figure should be increased about $3,000.

Q. Where is that figure you have just mentioned?

A. $45.577 should be increased by a percentage—

Q. Where is the $45.577?

A. That is under the column headed both amounts.

Q. Oh, yes, the grand total.

A. The grand total.

Q. What is this total charge, or grand total $265,000; that is the total cost?

A. Yes sir.

Q. Including these commissions, or percentages rather?

A. Yes sir, that is the total cost. That is the total cost of the construction covered by the bills

of the High Pressure Company during this period of time.

Q. Included in which is $45,577.93 of percentage on the work.

A. Yes sir, it also includes a small expenditure for land, services, meter and meter installations on which no percentage was added. I did not have those figures separately, so I had to include them in here.

Q. (By Mr. Miller.) But in addition to the $45,577.97 of profit was 7 per cent. on that profit allowed additional for freight?

A. No sir, 7 per cent. on the base cost before the profit was added; 7 per cent on the cost of labor and material.

Q. On the $219,664?

A. Not on that total amount, no sir. If you will refer to Table 4 you can see the years in which the percentage was added for material and labor, for freight, cartage, storage, wastage and so forth. Prior to 1920, which was the first year when that charge was made, those items were charged directly to the base cost, so that presumably the books reflect an expenditure for those items every year. They are legitimate items of expense which the company has to meet whether it is done by the High Pressure Company or whether they did it themselves.

Q. So if the High Pressure Company had not included those items they would have been reflected in the base figures.

A. In the base figures.

Q. So that really does not make any diference.

A. That really does not make any difference. If that 7 per cent. is approximately a fair figure and I think that it is; it might be 1 per cent. or something like that—if they are doing it on a percentage basis it has got to be enough to include contingencies. Actual realization might come out a little bit more

or a little less. The fact it is stated the same for 1920 and 1921, I would assume it was ample to cover those expenditures of the High Pressure Company. A comparison of the percentage which those items amount to on the expenditures made by other companies does not lead me to believe that figure should be materially criticized.

Q. (By Commissioner Osborne.) Now you have come to the point perhaps where you can answer the question I asked a few moments ago. Taking any one for illustration where 7 per cent. is added, just explain those figures a little more in detail, will you? 33 1-3 per cent. is on the base cost, isn't it?

A. Yes sir, the base cost covering material and labor.

Q. When you add 7 per cent. on material only, what do you mean; you have already added 33 1-3 per cent. on material.

A. Yes, there has already been added 33 1-3 per cent. on material and labor for profit. This 7 per cent, is also added to the material cost.

Q. To cover freight, cartage, storage, wastage and so forth.

A. Yes sir.

Q. Is that 7 per cent. added before or after the 33 1-3 per cent.?

A. That is neither added before or after. It is added at the same time. It is added to the same base.

Q. Is it compounded?

A. No sir, it is not compounded.

Q. Then it is not 7 per cent. on the 33 1-3 per cent., whatever that figure might be; it is merely 7 per cent. on the base.

A. It is 7 per cent. on the base. That is my understanding of the way that is added.

Q. (By Mr. Miller.) As an engineer, would you say that figure was about correct, 7 per cent.?

Where do they get that 7 per cent.?

Commissioner Osborne: He has already in considerable detail said that was in his judgment, not to be criticized, and based his judgment upon similar charges, costs, of other companies, and the fact that it has remained the same in this company indicates to his mind that it is ample. He says in actual practice if you could figure the exact cost it might amount to a little more or a little less, but if you use a percentage in order to cover that item, together with contingencies, he thinks 7 per cent. is fair. Am I right?

Witness: That is right; you stated it correctly. Whether or not that is exactly correct would depend to a certain extent on how many small items were charged in the base figure, but taking it at its base value, I would say those expenditures would amount to approximately that figure.

Q. (By Mr. Brown.) On Table 3, you have a percentage of 22.2.

A. 22.2 represents the average.

Q. That is the average of all the percentages that go before that figure.

A. Yes sir, the average of all those percentages. If you would make that small correction I have indicated there it might bring it up to 25 per cent.

Q. That 22.2 would also be an average of Table 4 percentages.

A. That would also be an average for Table 4, excluding that 7 per cent. item.

Q. (By Mr. Miller.) Is there any reason why they could not have written in the actual expenditures for freight, cartage and storage, or would that be difficult?

A. It is rather a difficult matter, accounting for

all of those small items. I do not know exactly how this construction company operates, but assume that they have a storehouse where they keep material which belongs to them, some of which is used in common by the water company and some by the gas company and some by the electric company, like tools, for example, the matter of accounting for all those items separately for each company would mean considerably more work, I should state than accounting for them together.

In regard to the second note on Table 4—

Q. May I ask, just before you leave that Table 3, do you, as an engineer, and one of the Commission's experts, believe that this company should be allowed a profit, operated as it is in the office, in the manner you have stated?

Commissioner Osborne: I do not think that is a fair question, because what you are asking him to do is to give his judgment on what he thinks the Commission ought to decide.

Mr. Miller: I think your Honor is right; I will withdraw that question.

Commissioner Osborne: We have that responsibility. You have to develop the facts and we will assume our own responsibility.

Mr. Miller: I will withdraw that.

Q. Will you proceed with your observations of Table 4, Mr. Carver, please?

A. On Table 4, the last paragraph, on the note at the bottom I state that whether freight, cartage, and so forth, was charged direct in the years in which a separate percentage was not added for same, or whether the percentage added was intended to include same has not been ascertained. Since the last hearing I have written to Mr. Franklin in reference to that point and his reply indicates those

items of expense were charged direct in the years for which they were not included as a percentage.

Table Number 5 we might refer to next.

Q. (By Commissioner Osborne.) What has become of No. 4? We just finished it?

A. We just finished No. 4. Table No. 5 gives the book costs and the appraised values of the steam plant. The first three columns of figures indicate the charges of fixed capital prior to 1920 and during 1920 and 1921. The fourth column of figures indicates the total. I should state right here that the steam plant, the construction work was started much earlier than 1920. I think the first charges were in the year 1916, but it was carried in the construction work in progress account by the company up to the year 1920 at which time part of it was charged directly to the fixed capital account or transferred to the fixed capital account and the balance in 1921, the time the plant was placed in operation. The last four columns give the cost new and the present value as estimated by Dey & Zimmermann in their two appraisals, the one made as of January 1st, 1920, designated by them as report 1486, that is the one to which I refer on Table 1, that was submitted in the prior case, and the last two columns refer to their report 1814, which is the one which has been made by them at the present time and which Mr. Starr stated would be submitted in the case later. In each of those cases I have given the cost new and the present value by reason of the fact that the book cost shows charges for some second hand equipment, which in each of the appraisals is included at a value new and then depreciated.

Q. (By Commissioner Osborne.) I notice in comparing the cost new in report 1486 with the cost new in report 1814, the figures differ.

A. Yes sir, the figures differ. I have shown that difference——

Q. How do you account for that?

A. I have shown that difference in the following table and I have separated that difference due to change in price and change in inventory.

Q. Then by cost new you do not mean what it actually cost, but what it would have cost if bought at the time indicated in the report.

A. In those appraisal reports, yes sir. The difference in the figures is caused by two items, one, a change in price, a higher price in most cases, and another the difference in——

Q. I just wanted to make it clear that cost new did not mean cost new.

A. That is an estimated cost new. The book cost shows the charges as made on the books.

Q. Actual cost.

A. Yes sir.

Q. (By Mr. Miiller.) Which figure would be proper to use in rate making?

Commissioner Osborne: That is another matter where the responsibility is on the Commission. You will have to go to some pretty high authority to get an answer to that question. Nobody has ever answered it yet. We would be very happy if somebody would answer it firmly and judicially so we would know where we were at. The Courts have said, and all they have said is we must take all of these things into consideration and reach a conclusion in our best judgment. That is as near as we have been able to get to a formula. In other words the Courts have said, the Supreme Court has said there is no formula. That is the reason we all differ so much and we have so much controversy about these things.

Mr. Miller: My thought was there must be

some rule, because they would not expect your Honor to fix a rate that would be measured by the cost of reproducing the plant, then all this business is speculative.

Commissioner Osborne: If they did expect us to fix a rate measured by the cost of reproducing the plant, then that would be the rule and we would have no difficulty. What they do is to expect us to fix a rate measured by every element and by taking into consideration the actual cost, the cost of the possible reproduction of the plant and then any other element that may enter into it and then fix a rate which must be the correct rate, otherwise somebody else or some Court sitting in review will by the same process reach a different conclusion and say that the conclusion they reach is right and the conclusion we reached is wrong.

Mr. Miller: The answer to my question would be then an expert in fixing the rate would use both as a factor, I suppose.

Commissioner Osborne: We would use all the factors which have been indicated by the Court.

Mr. Miller: I will not put that question to the witness then.

Commissioner Osborne: There is really no answer to your question.

Mr. Starr: Maybe Mr. Miller can furnish an answer that would be satisfactory to your Honor.

Commissioner Osborne: Any answer would be satisfactory to me; I do not care what the formula is.

Mr. Miller: I can easily answer that; you

should take the lowest figure for our purpose and the highest for yours. I will withdraw that question, if your Honor please. I would be asking the witness to perhaps digress too much from his direct examination.

Witness: Referring to Table 5, I have indicated for the benefit of the company and the city in checking this table, the additions for 1920 and 1921, which are not included in this table, that is the additions for other items of construction than for the steam plant.

I also want to call attention to the percent additions or deductions as indicated as a subtotal in the amount of additions or deductions. Under the figures representing book costs in total there is a percent reduction of 8.85 per cent. for the purpose, as explained in the foot note, of reducing the profit charged on the books to approximately that 10 per cent. maximum. Of course that 8.85 per cent. is a figure that I had to calculate. It is not shown here.

Q. (By Mr. Brown.) That 10 per cent. is, in your opinion, a computation that compares to the 22 per cent.

A. Yes sir, I indicated that 10 per cent. was the maximum, without necessarily implying that 10 per cent. is a proper figure for this company.

Q. (By Commissioner Osborne.) Why did you fix 10 per cent?

A. I fixed 10 per cent. because 10 per cent. is a usual percentage for a contractor to charge for doing work on this basis.

Q. On a cost plus basis?

A. On a cost plus basis. Sometimes in times past that charge has been larger, but I think the average—that is the majority of contracts that are let on this basis would be fixed on a basis of cost plus

10 per cent. Of course it depends on a whole lot of factors, the size of the job and a lot of other things whether that is the percentage that is going to be charged.

Q. And whether the contracting company is part of the same organization or whether it is entirely divorced from it.

A. Yes sir.

Q. You know when you are dealing with yourself you have to be very scrupulous.

A. Yes sir, that is true. That is the reason I indicated that as a maximum of 10 per cent. Whatever the percentage is the figures are set up here so a conclusion can be reached.

Q. You set it up by way of illustration without indicating or attempting to say that the Commission should be bound by that.

A. Yes sir, that is right, I did not make any particular study of this to satisfy myself that 10 per cent. was or was not a fair figure. I merely took what is customarily charged many times for work of this nature and used that figure.

The percentages indicated in the Dey & Zimmermann appraisal figures are items of overhead cost included in their appraisals. They are not included in their appraisals in exactly this same manner, that is, you will find no 21.4 per cent. in report 1486 and no 15.75 per cent. in report 1814, but if you will take the accounts for engineering, superintendence, interest and taxes during construction, miscellaneous, general expenses, and so forth and add them together and relate them to other figures that are given in their report, those percentages will be reached. The reason that the percentage in report 1486, present value is 25.9 per cent. as compared with 21.4 per cent. cost new, the reason is due to the fact that they did not depreciate their overhead in that report. In the present report the overhead

expenses were depreciated and that is the reason the figures are more nearly the same.

Q. In the present report, do you mean that second report, or yours?

A. The second report, 1814.

Q. (By Mr. Brown.) Then that 21.4 includes overhead as well as profits?

A. There is no item of profit indicated in either of the Dey & Zimmermann reports. That percentage of overhead in report 1814 does not include some percentage additions which they made in their base figures for omissions and contingencies.

Q (By Commissioner Osborne.) How can you depreciate overheads?

A. Depreciate overheads?

Q. Yes.

A. Well, overhead for engineering, superintendence, interest and taxes, during construction; and miscellaneous expenditures like freight, cartage and storeroom, represent a part of the cost of the tangible property and when the property depreciates or is removed, the proper proportion of those overheads should be written off the books along with it.

Q. Because you have charged them up as part of the cost of the property?

A. Yes sir, they represent a part of the tangible cost just as much as brick and mortar.

Q. If you are fixing the valuation on the basis —taking as one of the elements the value of a piece of physical property and then depreciating it, it would have no relation to overheads in that operation, would it? Then you might take your overhead as a separate item and add to that depreciated value and get a total?

A. Yes sir.

Q. If you pursue it in that way you would not depreciate the overhead, would you?

A. Not unless you depreciated your overhead as a separate item.

Q. Would you depreciate your overhead as a separate item?

A. Yes sir, I would, if set up as a separate item I would depreciate it as a separate item.

Q. In either event you would figure depreciation on your overhead?

A. I would, yes sir. In setting up an appraisal myself, I always include the overhead right along with the accounts.

Q. Is that the customary practice?

A. I would not say it is necessarily customary. It is just as much customary as the other method, and possibly Dey & Zimmermann may follow that practice themselves in some other reports.

Q. Then there is no accepted practice among engineers in that respect.

A. I would not say that there was.

Q. Possibly it depends on which side they are retained by.

A. Well, not necessarily. Our system of accounts provides for the inclusion of the items of engineering, superintendence, interest and taxes during construction and miscellaneous expenses separately, if they cannot be allocated directly to the job.

Q. Do you know why—has it ever been indicated to you why in one of these reports they did depreciate overheads and in the other they did not?

A. No, sir, I could not answer that question.

Q. The effect of not depreciating the overhead gives an increased valuation, does it not?

A. That would give you an increased valuation, yes sir. Referring further to Table 5, account 116, accessory electric equipment, I would like to make an explanation with respect to that figure of $10,122 and $553, which is stated to represent the book cost

for the steam plant. At the time I made this table up I had to make an allocation of the total bill of the High Pressure Company in order to get this figure and due to the lack of definite information at that time I took 50 per cent. of the total as being the charge to the steam plant. I have since ascertained how much addition was made to the hydro-electric plant for items which would be charged in this same account and which would come under the same heading on the bill and I find that a larger proportion of the total than 50 per cent. was chargeable to the hydro-electric plant, so the total cost which I find here for the steam plant of $100,000 would be more nearly stated correctly if the figure were taken at about $96,000. I did not consider that was of sufficient importance, however, to rewrite and recompute this table, because in making use of it that can be taken into consideration.

Table 6, shows an adjustment of book costs and appraisals as given in Table 1, nd Table 7 to exclude the value of the steam plant which is shown in Table 5. Before I refer to that possibly I better refer to Table 7, which shows a comparison of the two Dey & Zimmermann appraisals to indicate, or to ascertain wherein the differences in those two appraisals occur. Sheet No. 1 shows a detailed comparison of all the items, all the major items in the appraisal starting in with the items in account 101, land, the steam plant site, the hydro-electric plant site, water rights and rights of way, and an additional plot adjoining the steam plant, and so on for each of the other accounts. The cost to reproduce as of January 1st, 1922, which is given in the report designated as No. 1814, and the cost to reproduce new as of January 1st, 1920, which is given in the report No. 1486 is indicated in the first two columns of figures. Similarly the present value in the last two columns of figures. That detailed appraisal or

comparison of detailed appraisal summary covers sheets 1, 2 and 3. Sheet No. 4 of Table 7 shows what those changes are due to. The first column indicates the changes in cost, due to changes in the inventory, that is, withdrawal of property or addition of property. The third column indicates the changes that are due to the revaluation, that is, a change in the price. The third column indicates the total changes. The items that are given in parentheses are deductions, all the other items are increases.

For instance, the first item, land, there has been a piece of land purchased since 1920 at a cost of $2,500 adjoining the steam plant. The first Dey & Zimmermann appraisal, 1486, included the water rights at a total of $24,000 and the second appraisal included them at a total of $20,000, so there is a deduction there in price of $4,000, making a total net change in account 101, a deduction of $1,500.

In the next account, general equipment, there is no change in the inventory that could be noted. There is an additional change in price of $300, an increase. In a similar manner through each of the accounts, account 114, gas engines, there is a withdrawal of $1890, which is indicated in the third column.

Q. (By Commissioner Osborne.) That engine was discontinued?

A. That engine was discontinued, in fact, it was not in use at the time the other appraisal was made, but it was considered as being available for use.

Q. A spare unit.

A. A spare unit.

Q. And was finally discarded?

A. At the present time I understand it is practically discarded, but it still may be in the plant, but it has been out of use for so long a time and is not in shape to be used that it was considered as being

an item which would be excluded at this time.

The total difference in the inventory, due to changes in the inventory, is shown at the bottom of the page, $33,657 and the changes due to revaluation amount to an increase of $81,453, a total change of $115,110.

Q. This amount of $81,453, changes due to revulation, by that you mean that the same property one year later, or two years later was valued at that much more?

A. Yes sir, that same property is valued at that much more. The appraisal as of January 1st, 1922, report 1814, as I understand it, is based on prices of material approximately as of that date. The appraisal that was made first, with which comparison is here made, was based on the cost of the material as of the time when it was installed, that is what Mr. Brickman estimated to be a fair cost for the equipment as of the date when it was installed, so that the two appraisal are on two different bases.

Q. So they are not comparable?

A. They are not comparable, and this explains how much the difference is.

Q. Let me have that again, and what it is due to. The 1920 appraisal which is designated as 1486 was on what basis?

A. That was on the basis of the cost of the equipment as of the date when it was installed.

Q. That is to say the actual cost or what it would cost to install it as of that date?

A. What it would cost, an estimated cost, an estimated amount that it would cost.

Q. A reproduction cost?

A. Yes sir, as of that date, for instance, property installed in 1915, before the war, was included at a figure that was estimated to be fair as of that time.

Q. As of what time?

A. As of the time when it was installed, that is, property installed before 1915.

Q. Without appreciation?

A. Without appreciation. The property installed in 1917 was figured as a fair figure as to that time.

Q. And no appreciation?

A. No appreciation.

Q. The 1922 valuation was on what basis?

A. I understand the 1922 valuation is on the basis of prices that are fair as of the date of the valuation, January 1st, 1922.

Q. Do you know what the purpose of the 1920 valuation was?

A. Yes sir, the 1920 valuation was submitted by the company in connection first with an application for the issue of securities, and second, in connection with an application for increased rates.

Q. Have you made any computation of the appreciation in the 1920 inventory which you say was not taken into account in fixing the prices in that inventory?

A. You mean have I made a computation which would be comparable with the——

Q. Which would make the 1920 inventory comparable with the 1922 inventory?

A. I have made no other computation, other than is indicated here, to find out what the difference was.

Q. I did not suppose you had, because that would be a very laborious process. I merely asked the question so we would know.

A. No sir, I have made no computation to indicate how much I would estimate that the 1920 appraisal should be increased to reach the basis of the 1922 prices.

Q. Or the 1920 prices.

A. Or the 1920 prices, no sir.

Q. (By Mr. Miller.) Mr. Carver, if you adopt the inventory made January 1st, 1922, then you have an inventory that exceeds by $115,000 the valuation fixed in 1920, is that correct?

A. That is not quite correct, Mr. Miller, because there have been book additions since 1920.

Q. Excluding the $33,000 of inventory additions.

A. Yes sir, that is additions to the inventory, then the figure should be $81,000 more.

Q. Would the effect of that be to allow this company in fixing the rate a capital of just that much increase in value; isn't that the effect of it?

A. That would be the effect of it, yes sir.

Q. So if that were to be the rule adopted by the Commission rates would be fixed not only on capital which was permitted to be issued by this company, but also on capital which would depend on the fluctuation in the market where these materials are purchased, that is correct, is it not?

A. That would be the logical conclusion.

Q. (By Commissioner Osborne.) I do not see how you can say that Mr. Carver, because you know the rates are not fixed on capital.

A. He said if they were, as I understood it.

Commissioner Osborne: Read the question.

(Question and answer read.)

Commissioner Osborne: He has answered in the affirmative; I cannot see that would be the situation at all, because, as a matter of fact rates are not and cannot be fixed on capital. It might be a coincidence that capital properly issued would correspond in amount to the value fixed, but it would not follow that the rate would be fixed on the basis of the capital issued.

Witness: Possibly I misunderstood the in-

tent of his question.

Commissioner Osborne: If the value is properly arrived at and if the certificates that are issued reflect the true value, naturally they would be the same, and that is what ought to be; they ought to correspond on the theory that stock is only issued representing actual value, but they do not always, for various reasons.

Q. (By Commissioner Osborne.) Will you tell me why you took so much pains to compare these two inventories when you say they are not comparable? There isn't any particular purpose I can see, from what you just said.

A. I wanted to see how much was due to increase in price.

Q. Increase in price?

A. Yes. How much of the increased valuation found in the 1814 report was due to increase in the unit prices.

Q. By that you mean appreciation?

A. Yes sir, how much appreciation was added.

Q. I asked you that question a little while ago and you said you did not figure it out.

Mr. Miller: I thought he figured it out on Sheet 4 of Table 7. Your Honor's question was just a little different, I think.

A. I understood your question, Mr. Commissioner, if I had figured out how much in my judgment would represent the increased price. This figure here represents how much Messrs. Dey & Zimmermann have added to represent the increase in price. If I were to figure it out myself I might reach a different conclusion.

Q. The figure that represents the increase in price is appreciation, isn't it?

A. Yes sir.

Q. Where have you shown that?

A. That is shown on sheet 4, of Table 7, the changes due to revaluation, $81,453. That figure represents the opinion of Messrs. Dey & Zimmermann as to the increase in price.

Q. (By Mr. Brown.) Not your opinion?

A. It might represent mine and might not. I have not attempted to form an opinion about it. I have gone over the unit prices. I think I probably would reach a figure somewhere's approximating that. Whether it would be near enough to be called the same or not I could not state.

Q. Right on that revaluation column, you checked the appraisals that were made by this company, Dey & Zimmermann, both times, that is 1486 and the other appraisal.

A. I checked the first appraisal with much more care than I have the second one.

Q. The units?

A. I also went over with the representative of Messrs. Dey & Zimmermann the unit prices that were used in the makeup of this second appraisal.

Q. Then you had checked the units in both cases?

A. Yes sir.

Q. Were those checks just about what you think would be right?

A. There was some question in my mind when I was going over it———

Q. As of that date, you know, that the charges were made.

A. Yes sir. There was some question in my mind as to whether the allowance made in this second appraisal, 1814 for omissions and contingencies was not rather high. As I recall it there was a percentage added to the base figures and included in the base figures and not in the overhead, of about 10 per cent., I think it is on the unit prices

for poles, fixtures, wire and so forth.

Q. That would not be a unit price, that item you are just referring to as being a little high, would it?

A. They have included it in their base figure, which is usually obtained by applying unit prices to labor and material. It is customary with the Appraisal Department of the Board to include that allowance in the overhead charge, usually.

Q. (By Commissioner Osborne.) Mr. Carver, will you look at a couple of these items, power plant building change due to revaluation $12,510; is that because the buildings themselves have appreciated rather than depreciated through the lapse of time, or because it would cost more to rebuild them at the present time, or when that second valuation was made or because of additions or don't you know?

A. This column indicates that it is due to, merely due to the increase in price.

Q. An increase in price; that is a price based on what it would then cost to reproduce it?

A. Yes sir.

Q. Take poles and fixtures, $19,631, does that mean that the mere cost to reproduce the same poles and fixtures would be increased that amount or does that mean that there were more poles and fixtures in the later appraisal.

A. It means that it would cost more to reproduce the poles and fixtures that were included in the old appraisal. The additional poles and fixtures are represented by the item of $6718.

Q. Then $19,631 represents the additional cost between 1920 and 1922, the cost to install those poles and fixtures, is that right?

A. Yes sir, that is right.

Mr. Starr: I understand the 1920 report was based upon prewar prices, the period would run long before that.

Commissioner Osborne: Further back; I think you are quite right.

Q. Does it represent the difference between the cost in 1920 and 1922 or the difference in cost between the date when the price was fixed, as of the date when the price was fixed and 1922?

A. Your last statement is correct.

Q. (By Mr. Starr.) When the work was actually installed and 1922?

A. Yes sir.

Q. (By Commissioner Osborne.) Does it take into consideration any depreciation in those poles and fixtures?

A. No sir.

Q. That is taken care of as a separate item?

A. That is taken care of as a separate item.

Q. They are depreciated before the final value is reached?

A. They are, yes sir. That would be shown in Sheet 2 of this same table.

Q. (By Mr. Brown.) That first column on Sheet 4 then, where it says changes in cost due to inventory, that is really the additions, isn't it?

A. That is really the addition to the property.

Q. Then, as the Commissioner has pointed out to you, the second column may be due to reproduction cost———

Commissioner Osborne: Increase in value.

Q. —increase in values.

Commissioner Osborne: Or appreciation, and the third column is the total, is that right?

Witness: That is correct.

Q. (By Mr. Miller.) Mr. Carver, referring to table 5, the Dey & Zimmermann appraisal is given first as of 1-1-20.

Commissioner Osborne: Table 5?

Mr. Miller: Yes.

Q. The second appraisal as of 1 1-22. Does the report show whether Dey & Zimmermann appraised the plant as of its value on that date, that is to say that in 1920, January 1st, 1920, or whether they used the prewar prices as Judge Starr suggests.

A. They used the prices as of the time the plant was built. Part of it was built———

Q. (By Commissioner Osborne.) You do not answer the question; evidently you did not listen to it carefully. He asked you whether the appraisal shows and you are giving your understanding.

A. The answer is yes.

Q. (By Mr. Miller.) It does show they used the prewar prices, the actual cost of installing.

A. I won't say the appraisal does show it. The testimony in connection with it shows it, and also a study of it. The appraisal itself may show it; I could not state.

Mr. Starr: We have it here; "based upon cost of labor and material as and when constructed."

Witness: Then the answer "yes" is correct. Table 6, I might refer to now, which is an adjustment of the book costs and appraisals as given in Table 1, and Table 7, to exclude the value of the steam plant as shown in Table 5, and also an adjustment of the 1920 appraisal to include omitted items, or the omitted item shown below. This table, I might state at the beginning, is also set up in somewhat the same—the same comment might be made with respect to it as might be made with respect to that 10 per cent. profit, that this is set up to show what the facts, what the conditions would be with the steam

plant eliminated without attempting to commit myself as to whether that is the proper thing to do or not. The omitted item that is added is the cost of buildings acquired from the Millville Water Company.

Q. (By Commissioner Osborne.) Just a moment. Won't you explain what this table is a little more fully, what its purpose is?

A. Well, the purpose of the table is to show what the—I first wanted to show what the operating results of the company would be if they purchased their power, if they had purchased their power and not built this steam plant, or if they did it at the present time. In order to do that I have to know what the value of the rest of the plant is, so I prepared these tables that have already been mentioned, getting the values of the plant on all the different bases that are available, and also figured the value of the steam plant on the different bases that are available. In this table I take the value of the steam plant from the totals and get a total value of all property of the company.

Q. Exclusive of the steam plant?

A. Exclusive of the steam plant.

Q. And you get several values?

A. I get several values.

Q. On different bases.

A. The cost new of the property according to the appraisal as to January 1st, 1920, the first Dey & Zimmermann appraisal with the book additions to 5-31-22, that is given in Table 1, as the cost new of $343,650, present value of $292,926. Those figures are taken directly from Table 1. I have added to that the cost of buildings acquired from the Millville Water Company in 1916, which is $1500 and which were omitted from that appraisal. There is a note there which indicates that that transfer of property was not approved by the Board of Public Utility

Commissioners, so far as I am able to ascertain, so there may be some question as to whether the water company owns it, but Dey & Zimmermann 1922 appraisal includes that item, so for comparative purposes I have included it here, at the cost as charged on the books. The adjusted costs, the adjusted totals are given as indicated below. The book cost in the first two columns as of 5-31-22 from Tables 1 and 7, $329,202, cost new and present value is $259,702 and the deduction for the steam plant on the basis of $100,000 value gives a cost new, according to the books of $229,202 and present value is $159,702. The adjusted totals for the 1920 appraisal bringing that down to 5-31-22, and deducting the steam plant gives a total of $215,150 for cost new and $187,426 for present value. The 1922 appraisal brought down to 5-31-22.

Q. This exhibit says 1-1-22.

A. It says 1-1-22, but in the second line below—that is the 1-1-22 appraisal, but I have added the additions from January 1st to May 31st, 1922, to bring it down to as late a date as was reasonably possible at the time. That shows a total value new of $251,281 and present value of $209,122. Those book costs, by the way, are adjusted to exclude a portion of the contractor's profit, as I explained before.

Q. (By Mr. Brown.) That is allowing a 10 per cent. profit?

A. Yes sir, allowing a 10 per cent. profit.

Table 5, in fact the other tables, are used in making Table 8, which is the last table in this exhibit. Table 8 is in three parts, A shows the saving in operating expenses for 1920 and 1921 and for four months of 1922 on the basis of purchased power and the adjustment of the company's income to correspond to that saving. On this sheet the purchased power is figured at 3 cents a kilowatt hour, which is the price that is being paid to the Millville Manu-

facturing Company for such power as is purchased at the present time.

Q. At that point; is that power obtainable by this company?

A. That power is obtainable by this company according to information which we received from the Millville Manufacturing Company and also the same conclusions can be drawn from the practice of the company; if they wish to use the power of the Millville Manufacturing Company they throw a switch in and use it, so they practically have a break down service, an emergency service from the Millville Manufacturing Company at the present time at this 3 cent rate.

Q. (By Commissioner Osborne.) What you are going to show us by this table is how much they would save if they shut down their power plant and threw the switch in and used all the current they now get from their own plant and bought it from the Millville Company.

A. That is correct. In 1920 the kilowatt hours output of the steam plant was 982,730 kilowatt hours and the production cost is as shown, $67,449. In 1921 and four months in 1922 the figures are also as shown and I do not need to repeat them. Figuring the cost of 982,730 kilowatt hours at 3 cents gives $29,481 and if we subtract that from the production cost for that year there would have been a saving of $37,967.62. The loss for the year 1920 as reported is $38,992, and the losses on the basis of the purchased power would have been $1,025.

Q. (By Commissioner Osborne.) Reported, what do you mean, reported by whom?

A. The annual report shows a loss.

Q. A loss on what?

A. A net loss from operations of the company for the year 1920. They did not make their operating expenses by $38,992. If they had purchased

power this year at 3 cents a kilowatt hour that loss would have been reduced to $1,025. In 1921 the saving would have been $25,642. The 1921 income as reported was $7,410, which would make the income on the basis of purchased power $33,052. For the first four months of 1922 the saving would have been $3,295. The income as reported was $4,182, and the income for those four months on the basis of purchased power would have been $7,478. I might state right at this point that Mr. Franklin testified, I think in the 1920 case, that the power was not available from the Millville Manufacturing Company to the extent they needed in 1920. I have not attempted to check the accuracy of that statement, as to whether they could have bought any more from the Millville Manufacturing Company in that year or not, but at the present time———

Q. (By Mr. Brown.) And since that time?

A. Since that time. At the present time I know the Millville Manufacturing Company has facilities to furnish the requirements of the company at the present time.

Q. (By Commissioner Osborne.) Have you any figures on what it would cost them if they had put in a proper plant instead of this steam plant, another kind of plant; have you any figures on that? Yes or no.

A. No, not here.

Q. Have you any figures on what it would cost them to build a proper plant so they would save money if they built a proper plant?

A. No figures here. Such figures are available, however, and that estimate could be made from the results of other companies who have installed different equipment right during this same period of time.

Q. Are the next sheets an elucidation of this sheet?

A. The next sheet shows the results of power purchased at 2.75 cents per kilowatt hour instead of 3 cents, and the following sheets show the results with the power purchased at two and a half cents instead of three cents.

Q. They only have three sources. Have you examined this plant?

A. Yes sir, I have.

Q. Do you know whether they can increase their water power at that plant?

A. I think they cannot increase the total amount of power that is available, it is limited, but they might possibly arrange to use it a little more extensively.

Q. Could they generate more power with the present water power available?

A. I think they could practically—

Q. Generate more electricity?

A. I think they could possibly run it at full load 24 hours a day if they made some change in their equipment there. That would not be any great increase, however, because they are practically running—

Q. Assuming they could not purchase the additional power they need, they would have to build a modern plant to replace the steam plant.

A. Yes sir, they would have to install different equipment.

Q. Anything more?

A. I made a calculation as to what the operating results would be fore the years 1921 and 1922 on the basis of their purchased power, with the purchased power instead of generating at the steam plant and related that to the value of the property exclusive of the steam plant.

Q. Will you say that again, please?

A. I took the data given in that Table 5, I think it is, where the steam plant was excluded, the values

found on that basis and I took the results as indicated in Table 8 at the 3 cent rate, the highest rate, the rate they are paying now for purchased power and related the net income that they would have received on that basis for the year 1921 to the cost new of the property as of 1921, excluding the steam plant. I mean cost new. I did not deduct any depreciation, either accured and I did not deduct anything from the operating expenses for the charges during that current year.

Q. The property without the steam plant would not produce enough electricity?

A. The property excluding the steam plant, and adding in the cost of buying the same amount of power they generated.

Q. What you did was to exclude the steam plant and add sufficient additional capacity to produce the present output.

A. That is in effect what it would do, because I assumed they could either purchase it or generate it for the 3 cents. On that result the earnings for 1921 would have been at the rate of over 13 per cent. on the value new. On the basis of the first four months of this year, over 10 per cent., that is before the deduction of depreciation either from value new or current earnings. If we deducted the accrued depreciation from value new, that would lower the base, and if you deducted annual depreciation, a proper charge for the current year would give a lower net earning. I do not think those figures would be decreased any by doing that.

Q. (By Mr. Starr.) Have you a schedule of that?

A. I have not that schedule as an exhibit, but I can give the figures.

Commissioner Osborne: He used that to refresh his recollection. He states what the computation, using the figures which he has already

used in evidence, shows. That is under the present rate schedule?

Witness: That is under the present rate schedule. I might also say that we made inquiry of the Millville Manufacturing Company as to what rates they could furnish, would furnish this power, on the basis of furnishing the whole load and their reply indicated that at the present price of coal it would not be over about 2 3-4 cents. They figured about 2 1-2 cents on the basis of coal at $6.00. The presumption is if they are furnishing break down service, which is a poor kind of load at 3 cents, they ought to furnish all of the load at a lesser figure. In fact, it might be possible to purchase it at less than 2 1-2 cents. That was not a definite figure. I mean by that—

Q. (By Commissioner Osborne.) What you did was to ascertain the general conditions in order to see whether you had a sound basis on which to proceed with your computation.

A. Yes sir. Whether they made negotiations or entered into negotiations to purchase it from the Millville Manufacturing Company, who are all ready to supply it right at this present instant, or whether they chose to put in different equipment and manufacture it more economically themselves, or whether they chose to buy it from some other plant, like the Electric Company of New Jersey, who are only about ten miles away. is of course a question for the company to decide. In any event, I think the cost of that power could be reduced by proper equipment or by purchase or some other means, could be reduced to the figures I have indicated.

Q. (By Commissioner Osborne.) Who put in this exhibit (indicating)?

A. Professor Temple.

Q. For whom, the company?

A. For the municipality.

Q. They showed the cost of manufacturing this power in the steam plant, did they not, per kilowatt hour?

A. Yes sir, I think it amounted to around 8 cents. I made also another calculation which I have not prepared in the form of an exhibit.

Q. You have or have not prepared it?

A. I have not prepared it in the form of an exhibit, because it is a rather long and uninteresting looking table. There was a similar calculation in Messrs. Dey & Zimmermann's report. A development cost study going back to the year—

Q. The purpose of that being what?

A. The purpose of that being to show what the results of operation have been from the beginning. Possibly it would be better to defer saying anything about that until the other figures are in, or I can give it now.

Q. Can you testify to it so it can go in the record?

A. I think so. I took the same figures for fixed capital as are shown in Messrs. Dey & Zimmermann's report for each year, and the additions for fixed capital for each year were also added, and 5 per cent. was added for working capital. The average investments at the mid-point of each year were found and 6 per cent. return was calculated on that investment, from the beginning, starting in 1892.

Q. (By Mr. Miller.) When you say investment, what do you mean?

A. The book figure. This plant on January 1st, 1892 was shown on their books as $60,797.

Commissioner Osborne: How long will the cross-examination take?

Mr. Starr: I was going to cross-examine on

general propositions and then ask if we may have an opportunity to have our engineers examine these exhibits.

Commissioner Osborne: The reason I asked was, the other case requires Mr. Carver's attendance as a witness.

Mr. Starr: I am willing to defer cross-examination until later.

Commissioner Osborne: Have you other witnesses to put on?

Mr. Miller: Mr. Temple ought to be here after noon.

Commissioner Osborne: Then we will finish with the direct examination.

Mr. Starr: I am perfectly willing to defer cross-examination, because I think it will give us an opportunity to make comparisons of these figures and shorten the examination a lot.

(Last question and answer read.)

Q. (By Mr. Miller.) Now, Mr. Carver, just one more question. Would Dey & Zimmermann, following their theory, adopt the new appraisal in figuring the investment?

A. Not in a calculation like this.

Q. You mean they ought not do it any way?

A. They did not.

Q. What purpose then, would the new appraisal have in fixing these rates if it is not reflected in some capital statement, what value has it in a rate case?

A. This is merely another element that enters into it. This study will show what the cost of developing this business was for the first few years, if you want to take the first few years.

Q. (By Commissioner Osborne.) Can you testi-

fy very briefly your conclusions in that respect, so we can adjourn at one o'clock?

A. Yes sir, I can cover this in five minutes or ten, I think.

Commissioner Osborne: Then you will have the whole thing?

Mr. Starr: Yes. Then we will make comparisons with their report and will be able at the next hearing to cross-examine intelligently.

Witness: I took the same net operating income as was shown in the report of Messrs. Dey & Zimmermann, because we did not have the records back as far as 1892, and I compared that with this 6 per cent. return figured on the capital, and accumulated the profits or losses above that 6 per cent. return for each year and added them to or subtracted them from the rate base. In other words, if there was a loss it was compounded, if there was a gain that was compounded negatively in the opposite direct, taken away, and the result shows the accumulation of profit down to 1898 and then there begins to be some losses, down to 1914 the accumulated losses are $266, that is without deducting any depreciation either in figuring the net income or in figuring the rate base.

Q. (By Mr. Miller.) So this is a case of accumulated profits?

A. Down to 1914 there was an accumulated loss of $266. 1915 there was an accumulated profit of $2,429, the next year $1723, the next year $2353 and the next year $3,607.

Q. Are you reading losses or profits now?

A. Those are profits. Those are total accumulated profits, not the profits for each year. In 1919 it was $2184. I will have to correct my testimony

there. That figure I gave in 1914 was an accumulated profit of $266 and those other figures from 1915 on are accumulated losses.

Q. (By Commissioner Osborne.) Losses?

A. Losses. In 1919 there is an accumulated loss of $2184, in 1920 $54,609 in 1921 $70,274, in 1922 $74,860.

Q. What year was the steam plant built?

A. The steam plant went in operation in 1920. That is when the losses started to be serious.

Q. What had they amounted to up to that time?

A. To the end of 1919 it was $2184. The next year it was $54,609. I made a calculation with the rate base, the book figures reduced to or changed to reduce the profit of the High Pressure Construction Company to 10 per cent., and with the steam plant eliminated and operating expenses adjusted to include all of the power generated by the steam plant purchased at 3 cents, to see what result that would give, and that showed for 1920 an accumulated loss of $13,294 and for 1921 an accumulated profit of $5678, and for 1922 calculated for four months only—

Q. (By Mr. Brown.) Have you all this in exhibit form, Mr. Carver?

A. I haven't it in exhibit form, because as I said it is a kind of long and uninteresting calculation. The only figures you are interested in are the last ones on the table really. If you think it is of sufficient importance to have it written out I can do it.

Q. (By Commissioner Osborne.) No use writing out anything that has no bearing on the case.

A. We have been kind of short of help in our stenographic service in our office and I curtailed the typewriting as much as possible.

Commissioner Osborne: Do you want this tabulation?

Mr. Starr: I think if we had the testimony

we will have all the testimony we desire to formulate the cross-examination.

Witness: I will be very glad to show this to the company's engineer or the city's engineer. The details of making it up are practically the same as—

Q. (By Commissioner Osborne.) Do you know whether the company was authorized to issue the necessary capital to build this plant?

A. No sir, the company made application for the issue of some bonds to pay for the construction of this plant after it was built in 1920, or after it was practically finished; that application was for 8 per cent. bonds I think to be issued at a discount and the application was denied at that time because the Commission did not approve of—it did not approve of the application.

Q. (By Mr. Miller.) Did you look at the books of this company for 1920 and 1921?

A. I examined certain parts of the books.

Q. Do you believe those books honestly reflect the result of the operation for 1920 when they show a loss of $54,000?

A. Since the last hearing we have received a letter from Mr. Franklin stating that as a result of an investigation made by Messrs. Dey & Zimmermann to check up the unaccounted for current, that they had concluded, the engineers had concluded there was more power being used at the water plant of the company than they had thought theretofore and that the water company would be billed for an additional sum. Just what the figures are I cannot state. That would cut down the unaccounted for current by some larger or smaller amount.

Q. (By Mr. Starr.) That covers the period subsequent to 1920, does it not?

A. I think so.

Q. (By Mr. Miller.) Do you know whether or

not anything has been improperly charged for or charged against the electric light company by one of the other companies, charges which should be borne by the other utility?

A. I have not gone into that subject in detail. I have received, upon request, from Mr. Franklin, a statement of the salaries, the total salaries paid to the office—well, to the managerial organization, as you might designate them, at least I understand that is what it covers, the total that is paid to each party and the allocation of that total to the four companies, that is water, gas, electric, and the construction company. I have not gone over that in detail, but it occurred to me that possibly some criticism might be made due to the fact that no part of the manager's time was charged to the High Pressure Company. I do not know just what the explanation is. There may be some logical explanation of it. I cannot say.

Q. (By Commissioner Osborne.) You observed that was the fact?

A. I just observed that was the fact.

Commissioner Osborne: Of course it will be encumbent upon the company to justify these transactions of an unusual character. We will see what they say.

Mr. Miller: One more question, with your Honor's permission. In the course of operating or in any of the items did you allow—was there allowed something for interest on the debts, whether funded debts or floating debts?

Witness: That would not come in the operating expenses. That would come in as a deduction from gross income.

Q. That was allowed in calculating whether or not there was a profit or loss though, wasn't it?

A. No. The profit and loss, as I have used the

term, only referred to profit or loss on operation, gross profit or gross loss. I have not given any consideration to what becomes of the money afterwards.

Q. (By Mr. Brown.) This electric company sells steam to the gas company, does it not?

A. The electric company sells steam to the gas company, and that is another item that enters into the property.

Q. Have you gone into that phase of the operation?

A. I have checked over the company's calculations by which they arrive at the charge for that steam during the current year and have noted the manner in which they charged it prior years. I think possibly in 1921 or 1920 they did not charge a sufficient amount for steam to the gas company, in fact they increased their charge this year. It really is a kind of conflicting situation all through and requires considerable study both on the part of the company or anyone else to figure out just what is the proper allocation of the different charges.

Commissioner Osborne: I suppose the only reason it is important is its relation to the consumers of the various companies and the rates charged to them; they have to be properly allocated, co-ordinated and synchronized, and so forth, so there would be no injustice done. Anything further from Mr. Carver?

Mr. Miller: He could be recalled at some other hearing, I suppose?

Commissioner Osborne: Oh, yes.

Mr. Miller: Nothing further now.

Q. (By Mr. Brown.) Colonel Betts would like to know about the meter ratings between the water company and the electric company; they are metered, are they not, the electricity that is supplied?

A. I would assume they were, but judging from Mr. Franklin's letter I would assume—it raises some question in my mind as to whether they are or not. If there was an inaccuracy in the amount of current for which they were being billed it would look as though the meter, if the had one, was decidedly wrong, or else it was being billed on an estimate which was inaccurate. I cannot state.

Q. (By Commissioner Osborne.) You do not know?

A. I do not know.

RECESS FROM ONE TO TWO O'CLOCK.

AFTER RECESS.

W. E. S. Temple, recalled on behalf of City of Millville.

DIRECT EXAMINATION

By Mr. Miller:

Q. Professor Temple, you were requested to prepare a tabulation of the costs of production and operation of the Millville Electric Light Company; have you done so?

A. I have.

Q. Will you please produce it?

A. Yes sir.

Q. Can you furnish copies to Senator Brown and Judge Starr?

A. Yes sir.

Mr. Miller: Kindly let the Court have the original. I ask your Honor to mark that as an exhibit.

(Underlying data for Exhibits P-1 and P-2, received and marked Exhibit P-12.)

Q. Will you state briefly what this tabulation contains, Professor, explaining the different tables?

A. It contains a summary in detail, rather a detailed statement of the underlying facts for the vari-

ous graphical exhibits which were presented the other day. Exhibit P-1, which was presented October 3rd, was called "Energy Record 1917 to 1922" and shows the power generated in the several sources of supply—rather, the power sold from the several sources of supply and the power output from the individual sources. Exhibit P-2 showed an analysis of the costs of production from the sources of supply. There were such a large number of matters treated of in both of those exhibits, particularly in P-2, that I was asked to present the underlying data in tabulated form, and that is what this exhibit P-12 is.

Q. (By Commissioner Osborne.) The underlying data for exhibit what?

A. For exhibits P-1 and P-2. A further explanatory statement would, I think, be proper; the determination of curve C, surve E and curve I in exhibit P-1 was made by apportioning the total sales for any particular year for which the point would be under consideration, apportioning these sales to the sources of supply involved. The basis of that opportionment is entirely a question of average, because of the fact that all of these sources pump into a combined system from which distribution is made, and the losses from that system would be apportioned to each of the several sources. The portion sold from the several sources would be likewise apportioned. As regards 1917 to 1921, inclusive, the underlying data, the original data upon which these tables are based was determined from the annual reports of the company and for 1922, the four months, the underlying data as regards both power produced and expenses are obtained through various other channels. The power produced and power used by the company was transcribed by myself from a record submitted to me by Mr. W. C. Buell, I believe, the president of the Millville Electric Light Company at this time,

and later checked with that original, my transcription later checked with that original by Mr. Carver of this Utility Board's engineering staff and myself, and found to be O. K. That is the source of the information for 1922, as far as power generated and used by the company is concerned. The source of information for power sold and for other expenses cited and analyzed in these tables, that source was from monthly reports made available by the company either to the Engineering Bureau of the Commission or to myself, and I presume these are an exhibit in this case. If they are not I could transcribe them and put them in, but it is my understanding that they are.

Q. (By Commissioner Osborne.) What do you think are exhibits?

A. The monthly reports which have been presented to this Commission, the Utility Board's Engineering Bureau.

Commissioner Osborne: Did you offer them?

Mr. Miller: I will offer them.

Commissioner Osborne: Did you offer them?

Mr. Miller: I did not, but will offer them now if they are the basis of his testimony.

Commissioner Osborne: Any objection?

Mr. Starr: Not the slightest.

Witness: The log sheet from which the power generated and used by the company was determined, I do not know whether that has been submitted or not, but if it has not I will transcribe it and submit it as an exhibit if that be fitting. I understood that was to be turned in.

These tables are collected by years and by plants and by accounts. Coming to the first year in which the steam plant operated, which would

be 1920, the 1920 production is shown on page 7, that is where it begins, and as it will be seen, the first source treated is the hydro-electric plant, and that is followed by power purchased, and then by the steam plant, and on the preceding page the other items of operating cost are set forth, and then at the bottom the total in both amounts and also in unit costs are given. With the exception of 1922, the figures in this table check with those, that is, balance with those submitted in the report, but in 1922 there is a difference which I am unable to locate of just one even dollar between the operating costs as set up in the detail supplied to us for the various plants and the operating costs as set up in the monthly reports. That one even dollar is absolutely negligible, but I mention it because it is the only discrepancy which I was not able to clear up.

This exhibit P-12 permits a very quick, particularly in connection with Exhibit P-2, a very quick and clear and compact and absolutely correct picture of the various elements of operating costs which this company has met with in the period covered, 1917 to 1922. I would like to refer to it at a later time, but that completes the description of it at this time.

Q. (By Mr. Miller.) In one of these tables, or some of the tables, I notice the charges made by the electric light company against the gas company for steam, do you know anything about that, Professor? What is that steam applied to, do you know?

A. I think that would probably be more clearly set forth if reference would be made to an exhibit prepared which will show, which will make a little more clear just what the physical condition in that matter is. I have made, I have prepared a layout

which shows those three sources of supply and their location with respect to the gas plant, and if I may present that I can answer that question very quickly and very clearly. May I do that?

Q. I thought I would like to know first what is this steam supplied to the gas plant for?

A. For various processes in manufacturing gas.

Q. Is that delivered through machinery or through a pipe?

A. A pipe conveys it underground from the boiler room of the electric company to a suitable place of the gas company. I do not know just where.

Q. There it operates steam engines, various machines, does it?

A. That is my understanding.

Q. They sell a lot of power too, don't they?

A. The gas company sells gas, of course. I do not think they sell—

Q. I say the electric light company sells power too.

A. Yes, pardon me. I do not know whether they sell power to the gas company; they do to the water company. That occurs in the last three years, that is, that sale of steam occurs in the last three years of this record, 1920, 1921 and 1922.

Q. What was the amount of steam sold to the gas plant in 1920?

A. I can only give it to you as it is represented in value, not in amount.

Q. It is on your exhibit somewhere?

A. Yes.

Q. Where is it?

A. When you ask the amount of steam, the pounds of steam, I cannot tell you; I believe there is no record of that.

Q. The steam sales to the gas plant at page 7.

A. That will be found on page 7 at the foot of

the account representing the steam plant, $21,962.28. That is deducted from the cost of operating the steam plant in order to get—that is one of the deductions and there is another one and those deductions are made in order to get the net cost of steam plant operation.

Q. And there is power sold also to the gas plant, is there not?

A. No, the power credit was made because, I am told, because a charge was made for power used in the steam plant at a certain rate per kilowatt hour, 5 cents I think, for steam used for necessary purposes in the steam plant, operating the condenser in 1920 and for other purposes in 1921, but in 1920 it was charged for. That, of course, would not be right, because it would be there as though it was sold to its own self, the company's own self, so the $7,200 is deducted. As I understand it that charge appears in Account 403, called Other Station Supplies and Expenses, and given as $9,690.06, and in that account there is made that charge of $7,200, power being used by the respondent, by the company, and that deduction then is properly made in order to get the net operating cost. That is not sold to any outsider.

Q. In 1921 have you the figures also for the steam sold?

A. They will be found on page 9. The steam sold to the gas plant in 1921, that is in dollars, the value of it, the charge for it was $27,655.42. That is deducted from the gross cost of the steam plant operations for 1921 on page 9 at the foot of the steam plant account.

Q. Do you know whether that is the proper allocation of charge against the gas company, or do you just take the books as being true?

A. There appears to be no record, as far as I can find, of the amount of steam that was supplied.

I believe the company's representatives could better explain how that charge was arrived at. My understanding is that an effort was made to determine how much it cost to supply that steam, but in 1920 and 1921, however, the steam was not measured and apparently not a very accurate way of determining its value was used. But in 1922 meters were installed, in the early part of 1922, flow meters, by which the steam is actually measured and a more proper method of allocating the cost of operating to the steam supplied to the gas company has been put in force, but in the first two years there was no such method. That is my understanding of it.

Q. Without examining these items in detail, I will ask you what is the trouble with this plant outside of the character of machinery; what is the trouble there which results in this loss shown on the books of the company?

A. I will refer, if I may to sheets C and D in that connection.

Q. You may refer to anything.

A. First, I would like to present them, if I may. Sheet C, is—

Q. Is that another exhibit or one already in the case?

A. That is another exhibit.

Mr. Miller: I will offer it.

Q. What is that exhibit?

A. It is entitled, "Sold Power 1915 to 1922" and it shows the total power sold and the sales.

Mr. Brown: Is this marked?

Mr. Miller: I will offer it.

(Statement of sold power, 1915 to 1922, received and marked Exhibit P-13.)

Witness: It is entitled "Sold Power 1915

to 1922" and Sheet D is entitled, "Locations of Power Sources."

Commissioner Osborne: That will be P-14. (Locations of Power Sources received and marked Exhibit P-14.)

Witness: Referring first to P-14, there are shown three sources of supply. In the lower left hand corner of this sketch is represented, you might say, symbolically, the water plant and the hydro-electric plant of the Millville Electric Light Company. The water plant was already shown both interior and exterior, in photographic exhibits previously presented, the numbers of which I have not clearly in mind at this moment. This simply shows how that hydro-electric plant is related in both location and as far as, you might say, electrical connection is concerned, with the other two sources of supply of this company. To the right of the hydro-electric plant, as indicated there is the Millville Manufacturing Company's power plant, at relatively a short distance away. Somewhat northerly from the hydro-electric plant is the company's steam plant, shown in the upper right hand corner of Exhibit P-14. When you ask the question, what is the cause of the difficulty which this company has met with, there is opened up a very large viewpoint in connection with the matter.

Q. (By Mr. Brown.) Professor, you have described the diagram pretty well. The gas works is shown on here too, is it not?

A. Yes sir. I should have mentioned that. The gas works, which is in a northerly direction from the steam plant of the company, is indicated, just merely indicated in its relative location. I might add, if I may, that this sketch is purely a sketch. It

is not intended to be to scale; there is an approximate scale shown in one feature of this exhibit and that is the distances between the locations, that is, the distance from the Millville Manufacturing Company's plant to the hydro-electric plant is in round numbers 850 feet and the distance from the hydro-electric plant to the steam plant is in round numbers 13,000 or more or less feet; my information is varied on that, but I wish to say I have not measured either one of them, so I am not able to say the exact distance in either case, but I think it will be admitted to be approximately those distances.

The steam supplied—to finish the answer to your question awhile back, Mr. Miller—is carried from the boiler room through a pipe which I believe, goes underground into the gas works near by, which is shown on this upper right hand corner of this sketch.

The main source of trouble, as far as the cost of production in this plant, as was shown on the exhibit presented at the previous hearing, is the steam plant. Reference to the upper right hand corner of Exhibit P-14 shows at K the approximate location of the main prime mover, and generator in that plant, that is, there are 500 kilowatt alternating current generators, 6600 volts, and the switchboard, and in the opposite corner and next to it the exciter, 35 kilowatts and next to it another exciter, 50 kilowatts, the whole being steam driven, and next to it a condenser pump. This was briefly referred to the other time and it was explained that the condenser pump, the purpose of it is to carry cooling water into a device known as a condenser which contains, as the name indicates, the steam from the engine, and maintains what might be called in lay language a suction on the exhaust of the steam engine, that is, a vacuum, varying in amount, but in this case approximately 26 inches, and it is an advantage to do that and it pays to supply the power necessary to do

it. But there are limits in the amount of power which should be used for that purpose.

Referring to the exciters, it is necessary to excite an alternating current generator because only a direct current generator is self-exciting. All alternating current generators must either be excited by a machine directly connected to them or by storage batteries or some other source or by a separate machine. In the days of old when this generating unit was built and before the advent of turbines, certainly before their actual arrival, the generator exciters were not combined ordinarily with the generator; they were in some cases, but they were not commonly so combined and separate exciters are therefore provided. Those are the essential elements in that plant. Of course, there is piping and there are meters and there are various minor matters, all of which are necessary in any plant. This steam plant has shown a water rate on the engine, not specifically stated at any time, but a water rate which can be effectively determined to be in 1921 of the order of 65 to over 70 pounds of steam per kilowatt hour. When I say water rate I might perhaps use the term pounds of steam per kilowatt hour and that is in the neighborhood of three and one-half times what a generating unit of that kind should use. The cause for that tremendously high consumption was in part an engine which is apparently in very bad condition, evidently in very bad condition, and in part an excessive amount of accessory power required. In the case of the pump, the condenser pump, there is a 40 horse power motor on there and it is evident at once to an engineer that that is very much too large. It is probably not too large for the equipment in this plant.

Commissioner Osborne: May I interrupt you a minute? We have heard testimony now for a day and a half directed principally to the

point that this steam plant never should have been built apparently and is very inefficiently and expensively operated. Are you going to seriously contend that it should have been built and it is a proper plant? I suppose if that is so we will have to go on with this testimony.

Mr. Starr: Oh, yes, we are going to make that contention.

Commissioner Osborne: I thought perhaps you admitted a mistake had been made.

Mr. Starr: Not under the circumstances. We are going to contend that.

Commissioner Osborne: And it ought not to cost as much to generate that electricity?

Witness: We understood that, sir.

(Last part of last answer read.)

Witness: But that last statement does not mean that it is not too large for equipment of this capacity of anywhere near modern character or good operating condition, because it certainly is. When you have a large steam consumption by a prime remover, an engine, a main engine, which is the case with the engine which forms a part of the set indicated at K in the upper right hand corner of Exhibit P-12, you not only—

Commissioner Osborne: P-12?

Witness: I have not marked that. P-14. That engine requiring a tremendous amount of steam costs a lot more to operate in its own self intrinsically, and not only that, to get the steam out of there, to pump it away, as it were, to maintain the vacuum, there again it exacts another penalty. So much for the condenser.

As far as the excitation is concerned, the modern steam turbine, and when I say modern, I do not mean the last year, but steam turbines for years back, could be excited on at the very outside, 7 1-2 kilowatts. Here there is a capacity of 35 kilowatts supplying the excitation. That may be purely an accident. I cannot say. It might have been picked out from some place and really not all necessary, or bought for some other reason than actual need. Nevertheless it is there and it certainly is eating power up along with the rest of the equipment.

Q. (By Commissioner Osborne.) What is that exciter, a boiler or engine or what?

A. That is an electric generator, it is for providing the direct current required to excite the fields of alternating current, because alternating current is not able to excite its own self. There are possibilities in that line, but in practice that is not the method followed and an exciter is provided. In a modern turbine the exciter is built right on, ordinarily built right on.

Q. (By Mr. Miller.) Right on the end of the shaft?

A. Yes.

Q. This exciter is like a dynamo.

A. It is actually a small direct current dynamo.

Q. Whereas in this plant there is a separate dynamo to use as an exciter.

A. Yes, in fact two of them, one being motor driven and the other being driven by a large engine. I do not know what horse power engine it may be. It will undoubtedly be, if properly sized for a 50 kilowatt generator, it will be around 75, 80 or more horse power, which is absolutely a ridiculous size engine for supplying excitation for a 500 kilowatt generator. When they run the steam engine, which I am told at this time, is very rare, of course

the steam consumption in that engine adds very greatly to the gross steam consumption for the whole plant.

Q. What is the steam engine you say they run occasionally?

A. I believe it is an Ames engine.

Q. What is it for?

A. It runs the exciter marked N in the upper right hand corner.

Commissioner Osborne: N in the square at the upper right hand corner?

Witness: Yes. In the little key, the outline at the bottom, N equals 50 kilowatts exciter, engine driven.

Q. Did you tell us what this line was (indicating)?

A. I was coming to that. That is a connecting transmission line.

Q. What is the distance?

A. Approximately 13,000 feet, that is where the steam plant is located with respect to the hydro-electric plant. The plant from which power was purchased and from which power now is purchased at times, which is actually at this time serving as a standby power source for this whole community for this whole electrical property, is the one immediately to the right at the bottom of the sheet, a relatively short distance away.

Q. Do they send steam from 3 to 1?

A. No sir, that is entirely electric transmission. Steam goes from this point, from 3 to the place marked "Gas works" just above it.

Q. And they make electricity in 3 and transmit it 13,000 feet?

A. To 1. They also make electricity in 1, but there they make it by water power.

Q. The currents are combined there?

A. No sir, at least not heretofore. I do not know whether in the last few days they have. They are entirely separate.

Q. Isn't it on different circuits?

A. Yes sir, I referred to that situation the other day. It is not possible to parallel them, and there are economies that could be realized if that were possible, but it is not possible.

Q. Parallel, to combine them?

A. Operate them in parallel, in other words have both generators feed to the same set of distributing bus bars. They are really big conductors on the back of a marble switchboard or other kind of switchboard and it is customary to parallel the sources of generation, the sources of current and then have a common source in that way and then feed to a common network of loads. But in this case that is not done. If each connected load is not quite big enough—it may be too big for one of the sources, and the pair of them just a little bit out of the way for one, then they have to run both big sources in order to meet the requirements. That, of course is a minor objection.

Commissioner Osborne: Why can't you combine the two currents?

(Informal discussion.)

Witness: A certain amount of power is in this way available for send out from this plant. In other words, the total power generated at K, the upper right hand corner of P-14, is not available for send out, but only that portion which remains after all the other power is used. I think it might be an important part of the answer to your question to cite what the amount of that power is, that is, relatively. I will tabulate it and present it if you think it advisable. But in 1920 it was 144,000 kilowatt hours out

of a total generated of 1,126,730.

Q. (By Mr. Miller.) You mean that much was used at the plant or wasted?

A. Yes, that much was used. We are talking about the power used in this accessory equipment in the steam plant, and that much was used there, and that was all used, according to the statements made to us, that is, the information given us and I have that in form so that I can present it if desired. I understood that was also to be an exhibit presented by the company. It is in the records of the Engineering Bureau of the Commission here and I believe is in the case. That was only the power used in the condenser. It does not cover any power used in the exciter, because apparently that year all the excitation required was supplied from some other source, presumably from the steam driven engine, 50 kilowatt generator. That gave a remainder of 982,730 kilowatt hours as send out from that plant, and it is on that basis of course, that this production cost for that plant in 1920 has to be figured, because that is the thing which is comparable to the power, which is, we will say, sent out from the other sources, that is, it is on that basis that we have to determine the cost of operation, purely on the basis of what is sent out. That is, if we wish to assign or determine the operating cost for the plant on its own individual merits, where it pumps into a system as it does here, and the distribution losses are, of course, not paid for by any special funds, but have to be paid for from the proceeds of power sold, then that amount, that 982,730 kilowatt hours is not the appropriate figure to determine the cost of production from that plant, but the apportionment of that 982,000 and some odd which is sold, and in 1920 from the steam plant the amount sold, the apportionment sold is 859,311 kilowatt hours.

In 1921, the steam plant,total generated, has

dropped considerably. May I just parenthetically say that all this data I am giving you are shown on exhibits in your hands. That is Exhibit P-1 gives the figures that I have just been citing. I am not referring to it at this moment. I am referring to the tables from which it was prepared, but they are on that exhibit, P-1. In that year there was used the sum, or rather an amount of power of 249,265 kilowatt hours. That year the figure covers power for the condenser. Do you wish me to supply that in detail? I can, if you like. The power for the condenser in 1921 is stated to be 244,470, a very large increase over 1920, a little over 100,000 more in fact. The power required for the exciter, shown at N, Exhibit P-14, is given as 2,087 kilowatt hours. The kilowatts for lighting the plant are given at 2,708. A note is supplied with regard to the last two. It states here that the meter was set May 13, 1921. It does not occur to me whether that means prior to that time power was also supplied there or whether the meters were set at the time the motor generator set was put into operation. Whether it be or not, in 1922 for each month of service, of operation of the motor generator set there is considerably more power shown to be used than was given as the power required for the periods of May until the end of the year. It has been sufficiently difficult to ascertain these figures which we have had to obtain to base our analysis on, so that we have not been able to go through and root into such matters as that and find out whether or not the steam plant may have been running, I mean the motor generator set may have been running before that time, and if so about how much power it was taking, and so on. But we simply could depend entirely and only on the facts as they are presented to us. It may be noted that there is no station lighting shown for 1920 either, but in 1921, in December, it is shown as 2,708. In 1922 the station lighting for

the steam plant is given as 1,268 in January, 1,538 in February, 1,466 in March, 1,356 in April and those values show a total—I am not able to give you those totals at this moment and it is not worth while probably to get them. It is easy to see they will be very much in excess of the station lighting shown for 1921. In spite of those apparent delinquencies, the amount of power used in this plant for these various purposes, other than for sale, totals as stated 249,265, giving a total output from that plant of 407,935.

Q. (By Mr. Brown.) What are the percentages, can you tell offhand?

A. I had those with me the last time and I have not it at this time, because as I understood it, they do not want it. I will present them in tabular form if that is desired I would be glad to do it. At once it is seen that it is considerably more, the power used in the plant in 1921 is very much more than 50 per cent.; it is in round numbers 60 per cent. of the actual send out from the plant.

Q. (By Commissioner Osborne.) What is 60 per cent.?

A. The amount used in the plant to make the plant go and provide it with its lighting.

Q. 60 per cent. of the total amount of electricity generated?

A. No sir, that was sent out, of the useful electricity, in terms of current sent out. Delivered power is the basis always for the determination of losses or such things. That plant yielded a send out, according to the information, of 407,935 kilowatt hours.

Q. (By Mr. Miller.) How much was used in the plant?

A. There was used in the plant 249,265 kilowatt hours.

Q. Making a total of?

A. Generated total of 657,200. Now, of the

amount sent out, the apportionment sold was 344,280 kilowatt hours.

Q. (By Mr. Starr.) Pardon me, Professor, in what year is that comparison made?

A. 1921. I will supply this all in tabular form if desired.

Commissioner Osborne: I should think that would be sufficient for your purpose.

Witness: It is on the basis of that 344,280 kilowatt hours that the production costs for 1921 are determined, just as is on the basis of the sold apportionment that the production costs for hydro-electric plant were determined and also for the purchased power. In other words, all three sources are treated in the same way in these determinations.

1922 the total generated in the steam plant, four months only, January, February, March and April is shown to be 428,600. The amount used in the plant in that period is 137,738, and the amount sent out is 290,862.

Q. (By Commissioner Osborne.) Two hundred and ninety thousand and what?

A. 290,862. In that case again the percentage of power used in the plant is substantially, is very nearly 50 per cent., not quite as high as it was in the previous year, but it is approximately 50 per cent., 13 into 29, 13.7 into 29, which is a very little under 50 per cent. It must be noted that in that year the rate of send out, the rate of generation is considerably greater, the actual amount of power used in actual kilowatts in 1922 will work out very much greater.

Q. (By Mr. Brown.) What does that percentage indicate to you?

A. That the accessory power equipment in this plant is taking an absurdly large amount of power.

Q. In percentage, how much more do you think it is taking than it should?

A. Around three times as much, two to three times as much, certainly over two times. Understand, I am talking about a plant that would be a respectable plant, that is, I am not talking about equipment as old as this equipment is nor in the condition in which this equipment is.

Q. (By Commissioner Osborne.) You mean a reasonably efficient plant might use not more than one-half at the outside, the amount of electricity, of its output, for its internal purposes.

A. Yes sir. It would not use anything like one-half, your Honor.

Q. (By Mr. Brown.) You said two times as much.

A. I said it would probably not be more than one-half the amount this plant uses. In large plants it would be very much less than one-half, very much less than one-third. I am speaking of a plant of this nominal capacity of 500 kilowatts.

Q. (By Commissioner Osborne.) This plant uses one-third of its total output, doesn't it?

A. It has used an average of certainly at least that or more.

Q. You say a reasonably efficient plant, designed to manufacture, and manufacturing approximately the same amount of electricity should not and would not use more than what percentage?

Mr. Brown: One-sixth, I suppose.

A. Not over one-half that at the very most, one-half of what is being used here and I think even less than that.

I was going to try to give exact figures on certain accounts, but I do not want to add anything to the record that is not asked for.

Q. (By Mr. Miller.) Have you the exact figures?

A. I do not know whether I have or not. I am not going to bother hunting them right now unless you wish me to hunt them and I may not have them.

Mr. Miller: That is a very important question, it seems to me.

Witness: If you ask me for them I will supply them.

Mr. Miller: That will tell us how inefficient it is. I would like to have you get it, if you have it.

Commissioner Osborne: Suppose you put in an exhibit, a tabulation, it can be tabulated, and furnish the other side with a copy, then they can meet it when they come along with their case.

Witness: Yes sir.

Mr. Starr: All right; that is satisfactory.

Witness: Would you wish to have these points that I have here?

Commissioner Osborne: I do not think I would go into any more detail than necessary to make my direct case. You are usually pretty safe to leave the cross-examination to develop a good part of the case.

Witness: That just leaves one more matter to be referred to.

Q. (By Mr. Brown.) What you testified to now, as I understand it, is what you claim is one division of unreasonable operation.

A. Yes sir.

Q. Or whatever term you might use.

A. It is offered as an answer to the question as

to what appeared to be the trouble. That is one of the elements.

Q. (By Mr. Brown.) We are coming to the second now?

A. Yes sir.

Q. (By Commissioner Osborne.) What is the second, what does it relate to?

A. The second is in regard to the spread out condition of these plants as shown on Exhibit P-14. It is necessary, due to the distant points at which these plants are located from each other for a dual operating force to be maintained. In 1920 the station wages in the steam plant are stated to be—you will find it on page 7 under account 401—are stated to be $5805.59, that is just in the station. That imposes a unit cost on the production of power from that plant of 6.77 as is shown there, the right hand column—I have not described how this is constructed; you can see what these columns are, that shows the actual unit cost for which the amounts are given in the left hand column. Boiler labor for that plant is $9565.62, which imposes a unit cost on the production of that plant, on the basis of apportionment sold of a little over one cent, 1.112. The total labor cost in that plant, 1.789. Besides that, in the hydro-electric plant, a very much smaller plant that is in capacity certainly, and in pretense, the station wages are shown to be $6,025.76; that is at the top of this page, account 401 again, and the unit cost there is 1.370. That is on the basis, of course, of the apportionment sold from the hydro-electric plant and these apportionments sold are given in parentheses at the heading of each one of these groups so you can see what is referred to. If a plant had to be built, a situation which would permit of the combination of labor forces would be one of the most urgent necessities in designing and laying out and locating the plant, because otherwise there would be forever,

at least as long as the plant stands, a duplication of labor force. A plant which is built along anywhere near modern lines is not a serious plant to manage, that is to say steam turbines and well built, well designed boilers of anywhere near a modern period are not difficult to direct the efforts of. If they are hand fired boilers they must have labor to be sure, but there certainly is no question but what this is a wasteful location with regard to the labor charge. The total labor charge in actual dollars runs over twenty thousand dollars against a total apportionment sold—well, in that year very nearly two million kilowatt hours.

Q. (By Commissioner Osborne.) You say if the steam plant were housed in the same building with or closely connected with the hydro-electric plant, that a great economy in labor would be expected.

A. Most assuredly, yes sir.

Q. Can you state what that is? You say it now costs so much, twenty thousand dollars and it would cost how much if these plants were combined?

A. It would save at least the entire station wages of the steam plant, because the station labor in both cases would be available for operating the station.

Q. There is now a duplication of labor?

A. Yes sir.

Q. And one force would be saved?

A. Yes sir, and that amount is something over $5,000 that year. Of course, there is an excuse for building it here, as the basis of supplying the gas works, but it has not saved the gas works any money, based on the gas works own performance. It really has been a penalty to the gas works of a few thousand dollars at least.

Q. (By Mr. Miller.) Considering this to be a public utility that would not be an excuse, convenient to the gas works.

A. I only refer to it on that basis. I understand the gas works is an entirely separate company.

Q. Treating that also as a utility I say?

A. Yes.

Commissioner Osborne: Treating it as a customer.

Mr. Miller: Yes.

Witness: The insinuation is that steam has been sold at a serious loss, to the gas works.

Q. (By Commissioner Osborne.) Loss to the gas works?

A. I did not put the comma in the right place. Steam has been sold to the gas works at a serious loss to this company, that is the situation.

Q. (By Mr. Miller.) Why do you say that?

A. I say that is the insinuation; I have heard that remark by various members of the company.

Q. Do you say that as an engineer, or don't you know? What is your opinion about that?

A. I would not care to say, I would not want to say, I would not like to say without a very much better knowledge of what the conditions were. Of course, at this time it would seem that the charges for steam sold to the company should reimburse the company, and when I say company I mean the Millville Electric Company, for that service.

Q. (By Commissioner Osborne.) Is the steam a waste product, a by-product?

A. No sir, it is taken live and fresh out of the boilers.

Q. It is not a by-product?

A. No sir, it is new material.

Q. All the steam they sell—

A. They have to make.

Q. They have to make for the purpose of selling?

A. Yes sir.

Q. If they did not sell it they would not make it.

A. Apparently not, no sir.

Q. There would be no necessity for it?

A. No, there would not, no sir. It has certainly not worked out to the advantage of the gas company to buy steam from this point. Considering the cost of steam production for as far back as I think 1917 and accounting for changes in coal, it has cost some few thousands more than it surely should have cost had the gas company made its own steam, and not only that, but the steam plant, the gas plant boilers if they are, as it is presumed, lying idle—I have not inspected them, so I cannot say—

Q. (By Mr. Miller.) I suggest you only testify to what you know of your own knowledge.

A. I say, if they are; they would not be buying steam and making it too. On that basis then they are depreciating more rapidly.

Commissioner Osborne: We are not interested in this investigation and proceeding in the efficiency of the operation of the gas plant.

Witness: No sir.

Commissioner Osborne: The only question is whether in selling the steam to the gas plant the electric company makes or loses money by the operation.

Witness: As I understand it, Dey & Zimmermann's report has been referred to this morning. I do not know whether it is in the record or not.

Commissioner Osborne: Not yet, but it will be. Do you want to refer to it?

Witness: No, I am not particular about it.

Commissioner Osborne: It has been referred to on the statement of counsel that it would be put in.

Mr. Starr: I am perfectly willing to have it put in.

Witness: I would not be able to cite the page, but I believe reference is made there to losses as high as ten thousand dollars in the sale of steam to the gas company. That I would prefer to confirm, but I believe that can be found there.

Q. (By Mr. Brown.) Then do I understand there is a loss both to the gas company and a loss to the electric company in the distribution of this steam?

A. According to my calculation it is.

Commissioner Osborne: Haven't you attempted to capitalize this contract between the gas company and the electric company for the sale of steam?

Mr. Starr: I did not know there was any contract.

Commissioner Osborne: They sell, there must be a contract.

Mr. Starr: I do not think it has been capitalized.

Mr. Miller: It is a big item too, $27,000 a year.

Commissioner Osborne: I am surprised, especially as it seems to be a loss to both parties. I observe a tendency on the part of utilities to capitalize contracts like this.

Mr. Starr: It has not been capitalized, as I understand it.

Witness: The third feature in line with your question would be the use of such large equipment as is provided here. This equipment

was procured within the past few years, some five years, I believe or six years—the exact date of its procurement I cannot give in all cases, I believe I can in some—but it is within five to six years, and the use of slow speed reciprocating engines and this type of generator is absolutely against the interests of everybody concerned with it. It is for that reason that so many, so much of this kind of equipment is on the market and what they cannot sell as junk —what they cannot sell to somebody to buy for use, they sell as junk, because it certainly does not pay to maintain it.

Q. (By Mr. Brown.) You gave wages as the second reason. Have you any other item as the second reason for mismanagement and inefficiency?

A. Labor I cited, just to make that rather compact. Then, of course, there is a fourth one.

Q. You haven't your third yet, have you?

A. I referred to the large size equipment, which means of course, greater radiation. It is a rather minor element, but it is not to be neglected. Another result of large equipment is high lubrication charge. If you will refer to the year 1920, page 7, you will find that lubricants are shown there at $1601.

Q. (By Commissioner Osborne.) For the year?

A. Yes sir. It is ridiculous, but it is there.

Q. (By Mr. Browne.) Can you put in dollar unit forms the losses that you think are occurring under the oversized engine and too much lubrication charge?

A. I think I can, yes sir.

Q. (By Commissioner Osborne.) Do you say this plant, to generate this amount of electricity, even assuming that it uses the same type of engine, would not need one as large as that?

A. The lubrication would not be as large.

Q. I am not speaking of lubrication. Do you mean to say that this piece of machinery is too large even of its kind?

A. Large in weight, not capacity. A slow moving equipment must always be larger for a given kilowatt capacity, power capacity.

Q. Does that take more steam to move it?

A. More weight rotating.

Q. And more difficult, naturally, to generate steam?

A. Yes sir.

Q. And more oil to lubricate it.

A. Yes indeed, a great expense of course, all the way through, very much against every interest.

Q. That is too general. I am trying to confine the question to something definite and concrete. You have given me those two instances of the non-economy of too large a piece of machinery.

Mr. Brown: As I understand the machinery here, it is not a case where there is a 50 horse power engine being used to do, we will say by illustration, a 5 horse power job.

Witness: That has been cited before. I do not know whether I made that emphatic enough or not. What I referred to was the oversized exciters being very large, too large for the duties an exciter will have to perform for a generator of this size. That was some while back, and the question was asked about what ratio and I said in the neighborhood of certainly one-third or at the very smallest, one-half, and that question was taken up by the Commissioner.

Q. (By Mr. Miller.) About the rest of the plant, take the boilers, are they too large a capacity?

A. I am not through quite with the question of lubrication. The question was asked, I understood, if I could put that in dollars.

Q. (By Mr. Brown.) That is approximately now?

A. Yes, I can. It would be, well, considerably over one thousand dollars. That would be a very safe estimate.

Q. (By Commissioner Osborne.) Less?

A. Yes, provided it was a turbine, and that is not the latest type turbine by any means. In other words, steam turbine operation spins around, like a top, either vertically, or like a gyroscope, horizontally. It is not on ball bearings. A jet of steam, one or more, impinges what are called buckets, and all under favorable conditions of temperature and expansion and so on, and the result is that the economies in steam, the water rates, are very much improved, and that is a great big advantage of a turbine, but that is not the only one. It has a very much lower labor cost for maintenance, for taking care of, there are no reciprocating parts to wear out and shake the foundations to pieces and the other parts of the machine. Also in lubrication. My estimate of one thousand dollars is extremely conservative. I might say that the lubrication in 1921—that was for 1920, and in 1921 it has been somewhat reduced, it is down to $384. In 1922 you see there is considerably more than one thousand dollars. There is evidently some of that lubrication that has been ordered unnecessarily, or else due to the situation. Certainly a new plant just turning over for its first year would not appear to me—

Q. (By Mr. Brown.) Is that one thousand dollars just lubrication alone?

A. Yes sir.

Q. My question was also directed to the unnecessarily large unit. What saving would be made there?

Commissioner Osborne: He has disposed of that.

Witness: I can tabulate that for you.

Commissioner Osborne: He has disposed of that by saying the reason the unit is large is not because it is a 25 horse power engine doing a 5 horse power job, but because it is type of engine, a slow moving type of engine which is necessarily of large, bulky construction. Is that right?

Witness: Yes sir. That relates to the condenser. In other words the steam rate on that engine is very poor and it takes a lot of condensing capacity and pumping and so on to get the steam away from the engine and keep the vacuum. As far as the excitation is concerned, which I think you mentioned—you mentioned the matter of excitation also, unless that generator is in bad shape, comparable with the condition of the engine, then the exciter is around three times too big in capacity. In actual dollars I would hesitate to place a figure on that. It is merely one of the rat holes into which money is being poured in this plant.

Q. (By Commissioner Osborne.) What?

A. Rat holes.

Q. (By Mr. Brown.) You have given the saving in wages, $5,000, lubrication $1,000. I haven't in dollars the saving that could be made on the first two reasons you give, that it is not efficient.

A. I spoke of that in this way, it was taking around two to three times—

Q. I mean in dollars, the dollar unit, what would you say would be the saving annually?

A. I hesitate to place a dollar figure upon it, because steam is going to the gas plant, as I understand, very wastefully going there and I do not know how much of that might be corrected now by shutting down that exciter engine. Apparently some of

it has, because certain improvements have resulted. I feel it would be like trying to tell which car went off the tracks first in a train wreck. I would not feel able to put it any more specifically than that. In the other matters where a dollar figure is applied it is really borne out, it is more than liberally borne out by the succeeding years.

Q. Your computation would be, I suppose, one sixth of the generated power, whatever that is worth?

Commissioner Osborne: He says he cannot answer it. If you cannot, don't guess at it.

Witness: No sir, I would not care to.

Commissioner Osborne: It is a mathematical proposition.

Witness: It is capable of being answered in this way; in 1921, for instance, the production of which is shown on page 9, the total gross cost of production is in dollars $65,535.52, and that in cents per kilowatt hour sold apportioned from that plant is 19.015 cents, which is absolutely out of all reason; it is too high. There is a credit against it for the sale of steam of 8 cents, which brings it down to 10.995 cents. That is not quite so bad, but it is also out of all proportion for produced power. It is absolutely ridiculous. That is the net power cost.

Q. (By Mr. Miller.) What ought the net power cost be at a proper plant at that location? You say this is 10 cents, what ought it to be? That is what you are trying to get at, isn't it, Senator Brown?

A. Around three cents, not over that, including all overhead.

Q. That would make a difference of, taking this last figure—

A. You do not have to guess at that at all, because power is being produced and sold right to this

company. You will see right under the figure here, Exhibit P-14, from the Millville Manufacturing Company.

Q. Would that amount to as much as $20,000 in a year?

A. You will find that for 1921, electrical energy from other sources.

Q. Would that saving amount to how much?

A. I can give the saving on it for all the years, if you wish. I can give it right now parenthetically. It would be Exhibit P-15. May I state that number, your Honor? Exhibit P-15, one page only. In 1920 the steam plant output, and this is based upon output and in that way, therefore, there is no participation in power lost in lines whatever, was 982,730 kilowatt hours at a net cost of $67,449.16. The average cost of purchased power that year was 2.504 cents, that is on the basis of actual power purchased. I will not stop to hunt for the kilowatts on that; it is not important in this matter. The purchased power would have therefore cost $24,607.56.

Q. (By Commissioner Osborne.) That is if they had purchased 982,730 kilowatt hours?

A. Yes sir.

Q. Would have cost $12,504 and $24,607 instead of $67,000.

A. Yes sir, that is correct.

Q. (By Mr. Miller.) How much of a saving would that have made that year, 1920?

A. That is shown in the next line. The saving would be $42,841.60.

Q. Give us the figures for the next two years.

A. In 1921 the steam plant output was 407,935 kilowatt hours, the production cost being $37,880.10. The average cost of purchased power in that year was 3.017. The purchased power at this rate would have therefore cost $12,307.40. The loss that year, therefore, due to steam plant operation was $25,-

572.70. It will be noted that fortunately that year there was only produced a little less than one half of what was produced the preceding year. They did not lose quite so much money therefore. Next year the steam plant output was 290,862 kilowatt hours at a net cost of $12,021.87. The average cost of power in this year is 3.25. The purchased power would have cost at this rate $9,453.02. The loss due to the steam plant operation in 1922 is therefore, in four months $2,568.85. That purchased power rate is in the neighborhood of three-quarters, from one-half to three-quarters of a cent higher than a fair purchase arrangement would warrant. The amount of power purchased will explain just what is meant there. In 1922 the amount of actual power purchased is 67,840 kilowatt hours, whereas in the two preceding years, to show about how the rate ran, in the immediate preceding year it was 867,660, considerably more than ten times as much. One month in 1922 no power was purchased at all and that rate in that way creeps up; there is a fixed charge against the supply of that power that helped to raise it up.

Q. (By Commissioner Osborne.) Where did you get these figures from, the figures embraced in P-15, for instance?

A. They are based upon the same sources as described for the other exhibits, for 1920 and 1921, they are taken from the annual reports which the company supplies stating these facts.

Q. Annual reports filed with this Commission?

A. Yes sir, I think all the way through, for 1920 and 1921.

Q. All of these basic figures, except your computations, of course, are derived from the company?

A. Absolutely.

Q. Company sources?

A. Absolutely. In 1922—I did not quite finish there—they are not taken from the monthly reports,

but from the source already described—when I say reports, I mean those bound volume reports, they are not taken from those, they have not come in yet.

Q. When you say reports filed with the Commission, you do not mean the Commission's reports of decisions.

A. No sir, the annual reports this company prepares and sends to you, and in those reports we have found a few errors of one kind or another and have taken them back to the company in most cases for rectification, or for information. What I mean is, in other words, the company has confirmed those reports, in fact, Mr. Franklin, their general manager signs those reports, and I believe, swears to them—I am not sure about his taking his oath, but I think they do. They are from that source and they are on your file in your office.

Q. (By Mr. Miller.) It is your contention, I understand that the less power produced in the steam plant and the more power they purchased from the manufacturing plant, the less their loss was.

A. That is, of course, quite evident from the actual records.

Q. Is that shown by Exhibit P-15?

A. Yes sir.

Q. (By Commissioner Osborne.) Assuming his figures are correct, that is the deduction which you cannot very well escape.

A. Absolutely.

Q. You do not have to waste any time about that.

A. The grand total loss $70,983.15 for 28 months, or on the basis of $30,421.35.

Q. (By Mr. Miller.) Professor, I notice the company is reducing gradually the use of the steam plant and increasing their purchase evidently, is that so?

A. No, that is not correct. I have not been able to see that, sir.

Q. (By Commissioner Osborne.) There was a reduction in 1921 over 1920.

A. Yes, there was.

Q.That is apparent on the exhibit.

A. That becomes the fifth answer to the question; I have not come to that yet.

Q. (By Mr. Miller.)Was that because they bought more power and used the steam plant less that they reduced their loss?

A. That is exactly so.

Q. And the losses have almost been wiped out in 1922, they have been reduced to $2216.

A. That is only for four months.

Q. But even then it is less than in 1921 on the average.

A. Yes, it will total up less, absolutely.

Q. Is that because they are buying more power?

A. No sir, they are buying very much less power. It is because, if you wish to refer to it a moment, it is because they are selling less power, they are doing a little less, a good deal less business.

Q. Making less current?

A. Yes. Exhibit P-13 will bear that out for you, but you are anticipating that.

Q. (By Commissioner Osborne.) When you come to that you propose to show the less business they do the more money they make and the less loss they have. The witness says it is anticipatory.

A. Yes, it is.

Q. Just wait until he develops his case.

A. I would like to finish with Exhibit P-15 and will do it very rapidly. This observation must be borne in mind with regard to the comparison which has just been given and referred to, that is, that all of this steam plant cost should not be really fairly compared with the purchased power cost. In the first place they do not include, as stated in the paragraph next to the last, amortization, taxes, interest

on alleged investments.

Q. (By Commissioner Osborne.) They are only operation costs.

A. They are what we call bare bone cost of operation.

Q. Not intangibles?

A. Absolutely not; even overhead of operation —production, I should say.

Q. The price paid presumably does include those things?

A. It absolutely pays for the power delivered.

Q. You assume it does. You have not been in the other man's plant?

A. Yes sir, I have been in there, but I have not analyzed the books. I have spent some considerable time in there. Certainly it unquestionably does.

Q. Judging by your experience, and generally, you would say that it is large enough to. If it does not it ought to.

A. Absolutely so. In other words, if an arrangement could be made there, I am sure that three cents, three and a quarter cents could be very much reduced. That is the figure applied in this comparison, because I wanted to give exactly what was paid, even if it was unfairly high. Then there is no question about it in anybody's mind. If a lower figure, which I have confirmed from this Millville Manufacturing Company is applied, the loss in this comparison is much greater.

Q. Suppose you added a percentage for intangibles to the loss on this operation, what would the total loss be approximately?

A. If determined by an approximate apportionment of the interest paid for various obligations alleged to cover this construction work, it would be about twice what it is here.

Q. It would be double the loss.

A. Yes sir.

Q. On the basis that engineers ordinarily use for figuring intangibles?

A. I am figuring simply—I am taking into account what has been set up against this construction work in the form of interest all these years and a fair and conservative amount for overhead, in fact practically nil for that, and it would be just about double as it sets up in the deficit account of this company at this time.

Q. (By Mr. Brown.) What is the usual measure for part of that interest charge that is taken as being included in overhead, the item the Commissioner has just referred to?

A. Will you just say that again?

Q. You have taken the interest charges, haven't you?

A. Yes sir.

Q. As being a principal upon which you can compute this other item of expense.

A. Really, I did not make myself quite clear there. I simply added what the other overheads and intangibles, including capital charge, would be as a minimum, and they are really in excess of this identical figure on a conservative apportionment of capital charge; that is, the interest charge which has been set up against this property, this average loss per year. Does that clear that question up? Or did you refer to operating overheads exclusively?

Q. I understand engineers have many ways of computing that item you speak of.

A. Yes sir.

Q. You are comparing it, I understand, with the capital charge or interest charge—I do not know which it was you said. You said interest charge?

A. I did. I referred only to the capital charge or interest charge. They are substantially the same in character, in quality.

Q. (By Mr. Miller.) Did you mean interest on

those notes of the High Pressure Company?

A. The interest charges set up in these operating expenses since the construction work began. The average loss per year of this steam plant is $30,421.35 and as set forth in the last paragraph, Exhibit P-15, capitalized at six per cent., this sum naturally would indicate a fund of $507,022.50 that ought to be set up to help maintain these delinquencies in this plant, that is on the basis of its performance to date. That is the summary of what the delinquencies of this plant are. In a way we were led to sort of anticipate it. There is one other and very large delinquency about this plant and that is it is committed throughout its entire period of existence, whatever length it may be, to a tremendous expense for upkeep. That is borne out by the records of this plant as made to date and all you have to do to check it up is to look at page 7 where you find under, for instance, Repairs, Steam Equipment, Repairs Electric Equipment, Repairs, Other Repair Accounts. We start off there with something over twenty-two hundred dollars, very nearly twenty-three hundred dollars, in fact, every bit of twenty-three hundred dollars aggregate. Then in 1921 it jumped to $544 for station repairs, $10,245 for some of the steam equipment and $7,420.89 for some more of it, and the electrical equipment $192.

Q. (By Mr. Brown.) Professor, I evidently lost your reasons.

A. That refers to the fifth cause.

Q. The fifth cause?

A. Yes sir.

Q. What was the fourth one, by the way?

A. I do not remember. I think there was a fourth one, but forget what it was; I think it was lubricants.

Mr. Starr: Too much steam, oil and coal, that is the fourth.

Commissioner Osborne: Repairs?

Witness: This is repairs. I think this would be the fifth, sir.

Q. (By Mr. Brown.) Can you give us an idea of what the expense of those delinquencies is, in reason five?

A. In dollars?

Q. Yes.

A. I do not know that it is a bit more. Do you refer to, as compared with a plant which is, you might say, fairly efficient?

Q. You make the statement that this is the fifth delinquency you allege. You stated generally what the saving is or can be stated in the other reason, if there was a more efficient equipment or system of operating this plant. Now, this is the fifth reason. Can you say what the saving might be?

A. I suppose you do not mean with apparatus of this character, because I do not think it will ever be a bit less with this kind of stuff. It may be for short periods, but stuff of this character will never perform without trouble all the time. That is the reason the other fellow got rid of it. If you mean, however, as compared with a well built, well designed and well constructed plant, I would like to put that in a table that his Honor has suggested, if I may, if that will meet with your approval. In round numbers it would be a saving of many times, not many per cent. In other words, it would not be a proportionate saving, but a saving of really very many times.

In 1922, four months only, the station buildings did not take but $2408, which of course, is not out of the way, but there is still more on the steam equipment, engine $1272.13. That is only four months. The remaining equipment $1788.07. This is all set forth in these exhibits. I am only citing it

to you. Page 11 is that part that I have just stated and relates to 1922. So you see that it bears, its records bear out that Number 5 is large; around two to three thousand dollars a year would certainly cover the repairs on a favorable operating plant, I mean a plant in favorable condition. It would not have to be an A-1 plant, you understand this plant is supposed to be just started in 1920 and it should be on its virgin trip, you might say, on its trial trip and it ought to be able to get home at least on its own legs. So far, except for the fact that it may lean on the Millville Manufacturing Company as a source of supply, which is a rather slim thing to depend on for power to this community, that is, on its own legs it would have left the town in a hole and in darkness a great many times.

Q. (By Commissioner Osborne.) How frequently, if you know has it shut down absolutely for repairs?

A. In 1921 there was a period, I believe, beginning in August and September. I will confirm that, if you wish. There for about two months it was shut down and there was another period in 1921 that it was shut down. Then, I believe in 1922. That would be indicated, perhaps, by the power purchased; that would be a sort of indication of it, because they did not purchase it except when they needed to apparently. That all relates to the current expense of operation to the steam plant, not to the capital charge on it, which at this time I am not reporting on and am not quite ready to report on. But there are other very grave causes of expense in a plant of this kind as compared with a very modern type of steam turbine plant, in the cost of construction as well as in the cost of maintenance.

Q. (By Mr. Brown.) Before you go to the other point; you say the capacity of this plant is 500 kilowatts.

A. It is, nominal capacity, yes sir.

Q. What is the peak load of the plant?

A. That I made an effort to ascertain and was told that certain log sheets had not been kept and they could not give it to me. I will give the information which was supplied to me. The peak load, we can answer that for only 1922. We tried to get it for all of the periods, but we were not able to.

Q. (By Mr. Starr.) What is that?

A. We tried to get it for the entire period for which we considered this analysis, but we were not able to get it. It may be available at this time, but it was not at the time we made the request. You refer to the steam plant only, not the other plants or would you like it for all three plants?

Q. (By Mr. Brown.) The steam plant only.

A. In January, the peak load, January 1922, morning peak load stated to be 305 kilowatt hours —kilowatts; afternoon, 400. In February, forenoon 400, afternoon 440; March, forenoon 350, afternoon 410; April, 370 morning, 410 afternoon. The date is not given on that nor the hour.

Q. As I understand it, going back to your five reasons, you have diagnosed the disease. Now can you give the cure for all those ills?

A. Why, shut the steam plant down before five o'clock today, if possible. That would be my answer to that. That is its record is certainly against its being continued. As I say, it would take a fund, so far it would take a fund of over a half million dollars to meet its annual delinquencies. Certainly they have been getting better in the last little while, which is shown by the performance, but these various delinquencies that it has built up, in operating costs and so forth are based entirely—I mean are the results entirely of its innate condition, you might say; you cannot get it out of its marrow. It is a second-hand plant from start to finish with a few

minor exceptions. Its design and put-together, you might call it, is as bad as the equipment of which it is composed. It is located at a point well removed from the present distribution source, water has to be pumped up to it from the water system way down the line. I am coming to Number 6, which of course, does not relate directly to the steam plant.

Q. I thought you had finished with the steam plant.

A. That would be the cure for it. Number 6 really is not tied in exclusively with the steam plant, but it relates to the property and of course, it is property we are concerned with. If reference be made to Exhibit P-13 it will be seen that there are shown there curves in the upper left hand corner —I do not need to repeat them here, but I would like to refer to one or two of them, just in general. They show each class of power sales by this company as well as the total sale, that is, they show power, commercial power, commercial lighting, street lighting, and besides that they also show power used in the water plant. The water plant of this company is shown in the photographs which were presented at the previous hearing. Exhibit P-4 shows the rear of the water plant, that is a photograph of it and Exhibit P-5 shows the front of the water plant, or rather of the electric plant and part of the water plant. You see just part of the water plant immediately to the right of the picture, and when I say water plant, I do not mean to say that is not the electric company's property; it is in their appraisal, but used as a water plant, contains water plant equipment, pumps, and so forth, and of course, some more of that equipment is at the rear as shown in the exhibit referred to as 4. A symbolic plan, however, of that water plant, as well as the generating room of the hydro-electric plant is shown in the extreme left hand corner of

the bottom of Exhibit P-4. The water plant is the little outline, on the left hand side of that portion of the sketch you see there two squares each marked "P," that is a pump, each of those is a pump to which there is connected, to each of which there is connected a 150 horse power motor, so stated in the fixed capital list of the water portion of this property or these properties, if they are plural. The power to that pump is of some interest in a consideration of these properties and their performances. You will find that in 1917, that is as far back as my records are available, this pump took 428,943 kilowatt hours. It is shown at curve E on Exhibit P-13. From there it drops down, if you follow that curve you will see it gets lower than any other power sale of the company until 1919, which is very low, comparatively low.

Q. (By Mr. Miller.) You mean by that they may be using current that they are charging against the water company?

A. I do not mean that; I do not mean a single inuendo against using that power for that purpose. I am saying it is used within the confines of the company, not the general public, not directly.

Q. What do you mean by using that as an illustration then?

A. If you will let me finish I think you will see. Curve E from 1919 rises, from in 1919, 102,064 kilowatt hours to 487,554 kilowatt hours and in 1921 to a still higher figure, that is, power supplied to the company's own equipment, that is, I mean to the equipment right in that building. It is the pumping company, the water company instead of the electric company, but nevertheless it is right adjacent there, back of the switchboard and down the stairs. That is not sold really to the general public, and if you will look at the portions of these several curves here which show the power sold to the general public—

Q. You are referring now to P-15?

A. I am referring to P-13. There are several curves on there and you will see that everyone of them coincident with the enforcement of the new rate, which began early in 1921, drops at a very, very steep gradient. The thing that prevents the total sale from dropping to quite such a steep gradient is the sale for the pumps, that is the sale of power to the water company. This is set forth in Exhibit P-16, which is the next succeeding one, a very brief exhibit.

(Statement of loss due to steam plant operation, received and marked Exhibit P-15.)

(Statement of electric power used and water pumped in pumping plant at hydro-electric station, received and marked Exhibit P-16.)

Witness: The power pumped is—well, the year concerned is in the extreme left hand column and the water pumped, I should say in thousand gallons in the next, kilowatt hours in the next, and the amount in dollars for the power in the next. The water pumpage is stated, as the note says at the top of the body of the exhibit, power used stated to be electric and hydraulic, that is, in other words, from my knowledge of the situation, there are both water pumps and electric pumps. There may be certain very good reasons for discontinuing the use of water pumpage and bringing about the use of electric pumpage, but it will be noted that there is a general tendency downward—I do not need to describe it, you can read it in the left hand column under water pumped, it has varied up and down somewhat, but in 1921 it has come down, the total pumped, and this

is delivered to the mains, 478,757,000 gallons, but the kilowatt hours have gone up. That year is the last of the years shown and the last of my records. The kilowatts is up very considerably, the highest of all the years shown, which might indicate that perhaps all the water or a large part of it—I am not prepared to say what part of it—at all events, for some reason or other it seems to be necessary to use that pump rather excessively and it seemed to me it was proper and desirable and important in this particular matter before the Commission to show what the actual sales to the general public really are made by this company in 1921, during and following the first year of the new rate. I cannot give that analysis that way for 1922, because I do not know what the water pumped was. It may not be quite so much, or it may be more, but the sale total for the four months of 1922 continues to be depressed, that is to go down. If you will just notice, the power to the pump in 1921 is 674,829 kilowatt hours. That is greater than any other single item of sale, that is, I mean any other single kind of power, and there cannot be much money in making power in a steam plant at a tremendous price such as this is costing and sending it 13,000 feet and pumping water with it, because this year, this particular year the unit cost is—I have set it out on the sheets and I do not need to do more than refer to it—the unit cost in 1921 for steam power is, the net unit cost for 1921 is 10.995 cents, and it is pretty high. Of course it does not mean for a minute that is all coming from the steam plant, because it is coming from a general source of supply, all of it, but the point is that the consumption of that power is too great at a point so remote from what they would

set up to be their main source of supply. That is another favorable reason, if it is desired to do electric pumping—and as I say there is absolutely no criticism of that method in that plant at all; attention is merely called to the fact that that is where all the power that I have shown going there has been going to that pump in that year and the sold power was very small.

Q. (By Commissioner Osborne.) Your purpose is to show the reason for the large consumption of electrical energy generated in that plant.

A. No, your Honor. That is in addition to the large consumption of electrical energy generated in that steam plant. This is still another; this is not steam energy that is generated up here and used up here that which was referred to before as being about 60 per cent., very nearly 50 in 1922. This I am referring to now is in 1921 well towards the 60 per cent., that is used in these pumps down here (indicating).

Q. If you do not criticise the use of electricity in these pumps, just indicate what the purpose is.

A. I am merely telling where it went.

Q. In other words you introduce this to show where some of the energy generated in the hydro-electric plant was used?

A. Yes sir.

Q. Part of which pumping was used for the steam plant?

A. Yes sir, and also to bring out the fact that the sales to the public in 1921—this I certainly would like to make very clear—that the sales to the public in 1921 dropped off from the highest in the history of the company in 1920 to values that are lower than for some years back.

Q. You mean total sales to the public?

A. Yes sir, that is to say the total sales to the public, the total sales to the public as shown in

curve B, the heavy curve right under the gross sale, and that value there, the only value in this whole study that is lower is that for 1917, 1918 is higher.

Q. What does that indicate, if anything?

A. It indicates to me that the sales of revenue producing power in this property are on the downward path at a tremendous rate. That is not due to the steam plant, that is due to the rate.

Q. You mean to say the rate is too high?

A. No doubt about that.

Commissioner Osborne: Did this Board approve this rate, was this rate before the Board?

Mr. Miller: No, they filed the rate and then the old Board was abolished and three months having elapsed, Mr. Franklin put the full rate into effect.

Commissioner Osborne: Then this rate was a filed rate put into effect in the interim when there was no Board in existence?

Mr. Miller: Exactly.

Mr. Starr: That is hardly the entire story. The schedules were filed, the application was made for approval, testimony was taken before the old Board and no action was had on that testimony and at the end of three months the rates were put into effect.

Commissioner Osborne: There being then no Board in existence?

Mr. Starr: There being no Board in existence. Subsequently an application was made to this Board to have an order of suspension and Judge Treacy held that the rates having been filed and put into effect they stood until modified.

Commissioner Osborne: In other words,

you did not wait until there was some authority; you simply went and put them into effect.

Mr. Starr: Yes.

Commissioner Osborne: I want to try to find out what the fact is.

Mr. Miller: I will say, as far as the public is concerned, we tried to get an injunction and lost out. We tried to stop it, asked this Board to suspend it and they said it was too late, the power of this Board had expired.

Mr. Brown: Is that the same case, Mr. Miller, we are just writing a brief about?

Mr. Miller: Oh, no, that is the gas case. I might say I have, and I guess you have too, some of the public advertisements of Mr. Franklin; there was a great deal of publicity about it, they did not put it into effect without letting everybody know it. They served everybody notice what they were going to do.

Mr. Starr: It was done in good faith. They could not get action on the application.

Commissioner Osborne: It was done in good faith provided it was a justifiable rate. That goes somewhat to the question of good faith.

Mr. Starr: The testimony taken before the old Board shows it was a justifiable rate, no dispute about it, no controversy.

Mr. Miller: Hold on, Judge.

Mr. Starr: You did not appear.

Commissioner Osborne: I am not interested in that now.

Mr. Miller: There never was a determination.

Commissioner Osborne: I just wanted to know whether this Board was in any way responsible.

Mr. Miller: No sir.

Mr. Starr: This Board is not in any way responsible for it.

Commissioner Osborne: We apparently did not approve any issue of stock to build the plant or approve the plant or approve the rate which you are now operating under.

Mr. Starr: As far as this Board is concerned, no.

Commissioner Osborne: It is now four o'clock. How long will the witness take? How much more have you to testify to today?

Mr. Miller: I should judge from what he has handed me it will take him from a half hour to three-quarters.

Commissioner Osborne: He says there is a certain aspect of his testimony he is not prepared on yet, the capital part. He has to come back for that.

Witness: I have a request to ask for some information. I had hoped if they were going to present the valuation the privilege would be given to make certain inquiries, simply to facilitate it.

Commissioner Osborne: If you need information from the company, if you will state what it is, we will see you get it.

Mr. Miller: What do you want?

Commissioner Osborne: What do you need that you have not got?

Witness: I want to know the items of capital account.

Mr. Miller: You mean—

Witness: I will tell you, if you just give me a minute. The items of capital account that have been installed since 1915 by years, that is, in other words, I want to know if there have been seventy-five 25 foot poles put in and thirty one 30 foot poles, that is what I want to know and when was the building started?

Mr. Starr: Is that shown?

Witness: That is not shown or I would not ask for it, Judge Starr.

Commissioner Osborne: Also when the building started?

Witness: Yes sir. I gave the poles as an example, but I am referring to the items which are involved in this property which certainly show a tremendous capital charge per unit of kilowatt hours sold, and certainly should be in some detail looked into and it is not possible intelligently and accurately to do so until the period of construction for these several component elements of it is available. Do you understand what I mean, sir?

Mr. Starr: I do not understand. Professor Temple, if you will write me a letter indicating what you want, if the information is available, you will receive it.

Witness: Thank you, I will do that tonight or tomorrow then I can finish up the rest of that in a few minutes.

Commissioner Osborne: The rest of that, not now.

Mr. Miller: Professor, how long do you want to get that information and make your calculations?

Witness: I should really say around a week from the time I get it and I will make inquiry before certainly Thursday, therefore, it is up to you how long it will take you to get it.

Mr. Betts: We have it in total dollars.

Witness: I have it in total dollars.

Commissioner Osborne: You will furnish that information?

Mr. Starr: If available we will furnish it.

Commissioner Osborne: You have your books.

Mr. Starr: I do not know whether we have a record of how many poles there are and the length they are.

Commissioner Osborne: They cannot make a valuation then.

Mr. Starr: Whatever we have the gentleman will receive.

Witness: I will communicate with you in regard to it. Thank you very much.

Commissioner Osborne: That will take how long after you get the information?

Witness: It will take a week from the time he gets that for me and I will make inquiry within three or four days.

Mr. Miller: We can go ahead anyway.

Commissioner Osborne: Have you anything else except this testimony?

Mr. Miller: They can go ahead.

Commissioner Osborne: They do not want to go ahead until you get your case in. Do you want to go on until this gentleman is finished?

Mr. Starr: No. We want to have the benefit of his testimony, because it is nothing more than right that we should have.

Mr. Miller: You will be ready in two weeks if you get the stuff right away.

Witness: Sometimes it takes two weeks to get it or ten days.

Commissioner Osborne: The next day I can give in Trenton will be the 28th of November. If you want an earlier day you will have to go to Newark.

Mr. Miller: That will suit us. You will get the information in the meantime so you will have ample opportunity to make the calculations.

(Adjourned until Tuesday, November 28, State House, Trenton, at 11:00 A. M.)

BOARD OF PUBLIC UTILITY COMMISSIONERS

Trenton, N. J., Tuesday, December 5, 1922.

IN RE INVESTIGATION OF RATES MILLVILLE ELECTRIC LIGHT COMPANY.

Before the following Commissioners:
HARRY V. OSBORNE, Esq., President,
JOSEPH F. AUTENREITH, Esq.,
A. N. BARBER, Esq., Secretary,
THOMAS BROWN, Esq., Counsel.

For the Company, appears
LEWIS STARR, Esq., by
F. T. LLOYD, Jr., Esq.

Mr. Brown: That is the case that Judge Starr is interested in. Mr. Lloyd, son of Judge Lloyd, of the Circuit, is a member of that firm and he is empowered, I believe, to arrange for an adjourned day.

Mr. Lloyd: Yes, if your Honors please, Judge Starr is at present engaged in the Circuit Court.

Commissioner Osborne: Have you notified the other side?

Mr. Lloyd: Mr. Miller has been notified, yes, sir.

Commissioner Osborne: Anyone here representing Millville?

(No response.)

Mr. Lloyd: I don't think so. Mr. Miller was

notified last night and he consented that it go over, with your approval, of course.

Commissioner Osborne: A week from today we will be in Lakewood, but it is a question whether that would be a convenient place, or you could come here on Thursday of this week.

Mr. Lloyd: What will be the next time you will be here in Trenton?

Commissioner Osborne: Well, next Tuesday we will be in Lakewood and the following Tuesday we have the Montclair Water Company matter at Newark so we won't be here again until after the first of the year.

Mr. Lloyd: I see.

Commissioner Osborne: Thursday at Lakewood would be an advantageous time, if that place is convenient for you. On Thursday of this week here we have a hearing on proposed rules and regulations governing extensions by electric light and power, gas and water companies, and as soon as that is disposed of—it perhaps will take an hour or so—we could take up your case.

Mr. Lloyd: I hesitate to fix that date on account of Mr. Miller.

Commissioner Osborne: Could you get in touch with him?

Mr. Lloyd: I think I could.

Commissioner Osborne: Then suppose you get in touch with Mr. Miller and find out whether Thursday at twelve o'clock noon will do, here.

Mr. Lloyd: Very well, sir.

Commissioner Osborne: You put it up to the other side and see if you can arrange it. Is there any haste about this case? You seem to have taken so much time already that it doesn't seem to me a little more would be very detrimental to you.

Mr. Lloyd: I don't think so.

Commissioner Osborne: You represent the company that wants the increase in rates, don't you?

Mr. Lloyd: Yes.

Commissioner Osborne: Can you get along all right without it?

Mr. Lloyd: I don't know.

Commissioner Osborne: I judge so, otherwise you would be more urgent in pressing the hearings in this case.

Mr. Barber: Judge, I don't think that is quite correct, that this company wants an increase in rates. As I recall it they did increase their rates and then Millville complained and the question is whether those rates are reasonable.

Mr. Lloyd: It has been adjourned now several times.

Commissioner Osborne: Well, if you can't agree upon one or the other of these dates, we will fix the first date after the first of the year. You see, the holiday season sort of breaks up the latter part of this month.

Mr. Lloyd: Then it will be either Thursday here or Tuesday of next week at Lakewood.

Commissioner Osborne: Yes.

Mr. Lloyd: Very well, sir.

(Parties to advise which of the following dates is convenient for adjournment: Thursday, December 7th, 1922 at the State House, Trenton, N. J., or Tuesday, December 12th, 1922, at the Town Hall, Lakewood, N. J. If neither of these dates are satisfactory, the first convenient date after the first of the year to be fixed.)

BOARD OF PUBLIC UTILITY COMMISSIONERS

Trenton, N. J., Tuesday, January 2nd, 1923.

IN RE INVESTIGATION OF RATES MILLVILLE ELECTRIC LIGHT COMPANY.

Before the following Commissioners:
HARRY V. OSBORNE, Esq., President,
HARRY BACHARACH, Esq.,
THOMAS BROWN, Esq., Counsel.

For Millville Electric Light Company appears:
LEWIS STARR, Esq.

Commissioner Osborne: Are you ready?

Mr. Starr: Ready, yes, sir.

Commissioner Osborne: How long will that take?

Mr. Starr: That case will take the balance of the day, I suppose.

Commissioner Osborne: I know it has already taken the balance of several days.

Mr. Starr: This is the third day on which testimony has been taken. Mr. Miller is ill and will not be here, but we understand he is anxious to go on.

Commissioner Osborne: You have finished your case, have you?

Mr. Starr: No. We are the defendant. We are the respondent.

Mr. Temple: We hope to finish today.

Commissioner Osborne: I can give you until quarter of three. I should think you might fin-

ish it this morning, in view of the fact that you have already been two days on it.

Mr. Starr: The testimony of the petitioner has consumed those days without any cross-examination. We will put our testimony on as soon as we have an opportunity.

W. E. S. Temple, recalled on behalf of City of Millville.

In the absence of Mr. Miller, I am simply resuming the stand as per his telephone request, for the purpose of completing the presentation of our side of the matter, and in connection with the final presentation I have to offer a number of exhibits, the numbers of which I presume will be supplied. I am not aware of the number of the last exhibit.

Commissioner Osborne: The first exhibit now offered today will be P-17. Is this the exhibit that you have handed me, sir.

Witness: It is, sir. There are a number of exhibits, your Honor.

Commissioner Osborne: Offer them one by one, or if you can simply say you want them in.

Witness: I will offer them one by one, but they are already in.

(Energy record 1917 to 1922, received and marked P-17.)

Q. (By Commissioner Osborne.) Tell us about P-17.

A. P-17 is the underlying data for the energy record exhibits which have previously been offered, and it shows the generated power of the hydro-electric and steam plant and the power used in the plants, the net output and the sold apportionment

from the plant for the years 1917 to 1922 inclusive, 1922 covering four months only. Discussion of that record has been given and no further description or comments need be made, further than to say that this is the basis upon which the graphical exhibits previously offered, entitled, "Energy Records" are based.

(Statement entitled, "The average cost of power from each source, 1917 to 1922 (four months), received and marked Exhibit P-18.)

Witness: Exhibit P-18 is the average cost of power, the details by which the average cost of power was determined, that average having been given in one of the graphical exhibits preceding. There is an additional statement at the bottom of this exhibit which shows the average output from the three sources of power for the years during which they have been in operation back in 1917.

Those two no further comment is offered further than to say they simply are the underlying data by which certain graphical exhibits which you may recall were previously determined and the request was made for those.

Q. (By Mr. Brown.) The graphical exhibit you refer to is P-1, is it not?

A. P-1 and P-2 and also P-12, which is an analytical exhibit, which is a written exhibit. P-12 was the one in which the unit costs were shown and some of those unit costs were somewhat startling, apparently, and a request was made to show how those fundamental elements of getting those unit costs were set up.

(Statement entitled, "Power to Water Company's pumps, hydro-electric plant, received and marked Exhibit P-19.)

Witness: Now, P-19, which is the next exhibit relates to the power to the water company's pumps, in the hydro-electric plant. The quantity of power consumed by these pumps was shown in the previous exhibit and it was seen in that exhibit to be—

Q. (By Mr. Brown.) Would you mind referring to the exhibit?

A. Yes, sir, I am going to. The exhibit referred to is P-16. For some reason or other, the power supplied to these water pumps, which are in the north wing of the hydro-electric plant, has not unitl very recently been actually measured, but has been estimated. The instruments required for the measurement of that power are supplied on the board, but they have not until very recently been connected in. This estimation of power is very much to be avoided and it is not likely to be very accurate. For some reason or other, after the year had gone more than half by, a re-estimation of the power consumed by these pumps for the year 1922 has been made; as will be noted in Exhibit P-19 where the story is very briefly told, an addition of very nearly one hundred per cent. to the power already estimated to have been used by these pumps, has been made. The power originally charged for those pumps for the first seven months was 190,121 kilowatt hours. The additional power which is now assigned to them for that period is 169,343, at an additional cost of $9-313.86 as shown in the exhibit. The result of that additional power allotment is given in the lower part of this exhibit.

Q. (By Mr. Brown.) Is the result measured in dollars there, $133.60 a million gallons?

A. That is the result. The quantity of water pumped—I went through the records, through the courtesy of Mr. DeHuff and, I believe Mr. Buell, in the company's office, at least I consulted him about

it. I am not sure who was the custodian of the particular record, but I received through the Board from them after a couple of requests the information set forth under gallons pumped, which you will see totals up a little over two hundred and four million.

Q. That is a new high water mark for water, isn't it, $133.60 a million gallons?

A. That is very much a high water mark. I should say the kilowatt hours per million gallons pumped is likewise a very high water mark. But the efficiency of this pumping according to this estimated power is decidedly a low water mark; it is 14.9 per cent., that is all the efficiency that that pump shows. I might, perhaps, apologize for having carried the calculations out to such fine points, but I did not want any confusion in my own mind on it or in the minds of anyone who might read it, because the results are very startling indeed. It seems almost impossible that those pumps should be working at such a ridiculously poor condition as that; they are not much better than the steam plant.

Q. (By Commissioner Osborne.) What is the matter with the pumps?

A. I question the accuracy of the determination of power, for one thing. Besides that there may be many other matters the trouble with them.

Q. Are they the pumps that are on the hydro-electric end of the plant?

A. Yes.

Q. Notwithstanding the inefficiency of the pumping service the cost of the output is very low.

A. No, sir, it is quite the contrary.

Q. When you say it is not low, do you mean in comparison with the hydro-electric plant or in comparison, for instance, with an up to date, modern manufacturing plant, electrical manufacturing plant?

A. Your Honor is confusing two sides of the building there, two sides of the property. In referring to the low cost of the output, I believe you have in mind the low cost of the output of the electrical side. This we are referring to now is the pumping of water on the water company side; really all the same building and this analysis was made because of this reassignment of power which was adding a large amount of power assigned to those pumps, to an already very large amount. Before that power was added there, the efficiency of those pumps was evidently very, very low. They would know better than I why they considered the reassignment to those pumps. I do not know why that would be. They reassigned it, added the power to it, and that is the result of it.

(Statement entitled, "Miscellaneous Data," received and marked Exhibit P-20.)

Witness: The next exhibit is P-20, which is entitled, "Miscellaneous Data" and sets forth the expenditures which have been made on the steam plant since it first began operation, which was 1920. In two and one-third years there was $23,834 spent on that plant just for maintenance alone, and on the capital account after that plant was four years in building, eating up a tremendous amount of money in the way of interest charges, there was an additional capital requirement shown there of $14,745.54, the details of both of which are given in the exhibit.

Q. (By Mr. Brown.) So the Commission will appreciate it, this exhibit P-20 refers to the new plant, doesn't it, the so-called new plant?

A. Refers to the steam plant, the so-called new plant, yes, sir, the one that was put in operation in 1920 and the one whose operating costs have been the subject of considerable discussion.

Q. What is this exhibit related to, I mean what previous exhibit may be read in conjunction with it?

A. Exhibit P-12 for the years 1920, 1921 and 1922 would co-ordinate with it. In fact this shows a portion of what is already set up in Exhibit P-12, but is not set up in the same way. Further, as to capital account added in 1920 and 1921, there has been a number of memoranda obtained from the company from time to time, I believe all copies of which the engineering staff of this Board has and I have not gone to the trouble and time to copy those, because I understand they are all exhibits in the case. Are they not, sir?

Commissioner Osborne: Well, if they are offered they are. They are reports made by the company?

Witness: To the engineering division of the Commission, yes, sir.

Commissioner Osborne: They are not, unless they are offered.

Witness: I have gathered from what Mr. Miller said the other day that all such reports were a part of the record. If they are not, may I be permitted to offer them?

Commissioner Osborne: Yes.

Mr. Starr: I think, if the Board please, there should be a designation of the particular reports that are to be offered so that we could be apprised of what we are obliged to meet.

Commissioner Osborne: We will have him particularize if there is any question about it.

Mr. Starr: I should think that should be done. I do not know what reports he means.

Commissioner Osborne: What reports are they?

Witness: There is one, the actual title of which I believe is "Additions to Fixed Capital 1920 and 1921."

Commissioner Osborne: You do not mean the annual reports filed by the corporation?

Witness: I refer to memoranda.

Commissioner Osborne: Have you seen them?

Mr. Starr: I have not seen them, don't know what reports he means at all. I assumed he was referring to the monthly reports or the annual reports.

Witness: They are obtained from your company's office and in very nearly every case have been in typewritten form, not in absolutely every case.

Mr. Brown: Is this a copy of the exhibit, entitled "Millville Electric Light Company, additional fixed capital, 1920 and 1921?"

Witness: That is correct, yes, sir. I think there are a dozen at least of the exhibits.

Commissioner Osborne: Why are they necessary to your case? You got the same data directly from the company's books.

Witness: Yes, sir.

Commissioner Osborne: Why bother with them?

Witness: The only reason was that I thought you had to show upon what you based your statements in your other exhibits.

Commissioner Osborne: You based them on

the company's books.

Witness: Yes, and the company's records.

Commissioner Osborne: The same place these reports came from.

Witness: Yes, the books and log sheets and other information relating to operation.

Mr. Brown: I would suggest, as there is no counsel here for him, in case the exhibit he has put in now is questioned, he have the privilege of further supporting his exhibits by placing in the other exhibits.

Commissioner Osborne: Yes, of course.

Mr. Starr: We have no objection.

Commissioner Osborne: If these reports are necessary you may offer them.

Witness: They are certainly very necessary, because they really are the fundamental basis upon which the study is made.

Commissioner Osborne: That would be secondary evidence. Your fundamental evidence was the books of the company, not the reports.

Witness: Yes.

Commissioner Osborne: You got your information from the books or the reports?

Witness: From the books, either directly or through, you might say, the officers and employees of the company.

Commissioner Osborne: Your result and these reports both emanate from the same source.

Witness: Yes, the original fundamental record is the books and log sheets, and so forth.

Commissioner Osborne: That is all you need.

Witness: From the station log sheet, from two twenty-four hour records—

Commissioner Osborne: Doesn't the exhibit show just what you are going to tell us it shows, without going into all this detail.

Witness: Yes, but there are two matters that it does not really clearly show. In the first place the left hand record relates to November 22nd, 1922, when the steam plant was running,—the hydro-electric plant was running, and it will be noted that the kilowatt hours developed by the hydro-electric plant remains substantially always below seventy-five—seventy-five or below—pardon me, there was one reading of eighty. The right hand record. there is no steam output shown for the reason that the steam plant has had another annual breakdown some three or four weeks ago and is not at this time doing anything, so that the power supplied, the greater part of it is on what is called the bleachery, or more properly called the Millville Manufacturing Company, shown at the right hand side.

Q. (By Commissioner Osborne.) Where do they get the power they are not now getting?

A. From the Millville Manufacturing Company.

Q. They buy it?

A. Yes, sir. Buy it from the bleachery which is shown in the exhibit there.

Q. That is all right; you have answered the question; don't say any more than is necessary, because we only load up the record with a lot of talk and it takes us forever to try a case. Just get right down to the essentials.

A. The third thing in Exhibit P-20, page 2, is

the cost of commercial power to public consumers. No further information need be added to what that shows, except that, just in a word, the power to the pumps cost five and a half cents practically in 1922 and that to the public under the same classification cost very nearly eight cents. That is, to be sure, due to the difference in quantity used, but that is the way the public lands, so far as commercial power is concerned.

(Statement entitled, "Officers of company at 233 North High Street," received and marked Exhibit P-21.)

Witness: The next exhibit, P-21, Officers of companies at 233 North High Street, need have no further comment.

Mr. Brown: What particular exhibit is that built on?

Commissioner Osborne: P-21 is entitled, "Officers of companies;" what does it purport to show, that is all we want to know, just tell what it is.

Witness: The title is: "Officers of companies at 233 North High Street, Millville, New Jersey," the following companies being headquartered at that point and the source of information there is the annual reports for the years indicated, and information from the State Board of Taxes and Assessments and from the office of the Secretary of State as shown below.

Q. What is the purpose of this exhibit?

A. The purpose of this exhibit is to show the inter-relation between the three utilities, that is, they are all managed from there, and to show also that besides that there is also the High Pressure Construction Company, which does under very favorable

conditions all of their construction work chargeable to capital account, and the close relation of all of those is shown by that exhibit. It will be seen that S. J. Franklin is the general manager of all the companies, and Walter Wood is the treasurer of all the companies, including the High Pressure Construction, and it is in order to help clear up perhaps some of the tangle relative to the notes and notes for interest and other things which have been before this Board at previous times.

(Statement entitled "Miscellaneous Accounts and Interest Record 1915 to 1922," received and marked Exhibit P-22.)

Witness: P-22 shows in parallel, certain accounts, bills payable, other accounts payable, construction work in progress, High Pressure Construction Company bills, interest charged by years, as far as this information was available in reliable and clear form. At the bottom of that exhibit certain other accounts are shown, which specifically brings out the point mentioned in the previous hearing, that the overhead and general expense of the management of these three companies, due to their being nominally split up into three companies, runs into a tremendously large figure. It is seen there it is some twenty-eight thousand dollars, I believe.

Q. (By Mr. Brown.) Where did you get the information for this report?

A. Twenty-eight thousand and some hundred dollars, that information is obtained from the several annual reports for these various companies entered in those reports under the accounts indicated.

Now, sheet E is exhibit P-23—

Q. (By Mr. Brown.) Just before you go to the next exhibit. The year 1922, nine months you have marked, you did not get that from the report, did you?

A. I beg your pardon, sir. I think I was a little two hasty in reference to that. The 1922 interest charges came from the monthly reports, no annual reports being available at this time for 1922. The last entry under the item of Interest Added, explains itself, sir, it is estimated on the basis of certain previous months.

(Map showing location of land and buildings of Millville Electric Light Company, received and marked Exhibit P-23.)

Witness: Sheet E, which is to be considered in connection with an additional exhibit to be marked P-24—

Q. (By Mr. Brown.) What is P-23, what is the purpose of it, and where did you get it from?

A. P-23 is a map showing the land locations, the tracts of lands in the inventory of this company and the field locations, building locations. The building locations on both of these plots are obtainable with accuracy that would be as reasonable as may be expected in a rate case. You could not set foundation bolts by that accuracy, but they are within you might say a fraction of a foot instead of a foot, or thereabouts. It is seen that about half the land account in the inventory of the steam plant is not being used for the purpose of electric light generation and distribution.

Q. You say half is not used; which half do you mean, where is it?

A. The half indicated on the southern half in the plot marked "Athletic Field." I am not sure whether I am going too rapidly to be clear on that or not. I am making an effort to be as compact as possible.

Commissioner Osborne: All you have to do to be compact is to refer to this exhibit and say the property marked "Athletic Field" is not

used and useful.

Witness: Yes, sir.

Q. (By Mr. Brown.) What is the value set up for that piece, do you know?

A. Twenty-five hundred dollars. It actually encroaches a small amount on the north lot above it. The location of these plots of real estate in the city plan is shown on Exhibit P-24, as well as certain other things which are listed in a small key in red and blue on P-24.

(Map of city of Millville with locations of company's property, received and marked Exhibit P-24.)

Q. What is P-24, what is the basis for it?

A. P-24 is a map of the city of Millville supplied to me from the files of the city engineer, made from a careful survey map which is used, I believe, as the tax key map and shows the wards, and so forth. It is not a roughly made affair, but it is supposed to be accurate.

Commissioner Osborne: You need not say that; strike out "it is not a roughly made affair, it is supposed to be accurate" and that will give you an indication of what I mean by saying keep to the point.

Witness: I thought the Senator wanted to know whether it is reliable or not.

Commissioner Osborne: He does, but he does not want to know too much. He only wants to know enough.

Mr. Brown: Now, you did not tell the Commission what P-24 is.

Witness: The purpose of it is to show the location of the plants of the company, on the

city plan, I think I did say that.

Commissioner Osborne: All right, go on with the next one.

(Photograph received and marked Exhibit P-25.)

Witness: On P-25, marked on the back—

Q. (By Mr. Brown.) Where is P-25?

A. I have only one copy of P-25 at this time, sir. These are photographs as per the titles. Is that sufficient?

Commissioner Osborne: Indicated thereon?

Witness: Yes, sir.

Commissioner Osborne: We have already had a lot of photographs in this case.

Witness: None of these.

Commissioner Osborne: No, but other photographs.

Witness: Yes.

Commissioner Osborne: How many of these cards are there?

Witness: Five of them.

Commissioner Osborne: They show different parts of the plant and different aspects of the plant?

Witness: Certain of them I must probably comment on.

(Photograph received and marked Exhibit P-26.)

Witness: P-26 shows various views of the hydro-electric plant.

(Photograph received and marked Exhibit P-27.)

Witness: P-27 likewise shows views of the hydro-electric plant. One of those views was previously offered, but it had to be in here in order to clearly set forth one feature. In the upper right hand corner of P-27 is shown the switchboard of the hydro-electric plant and immediately below it at the picture D is shown the end of that switchboard and there is seen about the middle of that picture a small board which is now used in a temporary way for synchronizing the hydro-electric plant with one or the other sources of supply, which we commented on some time back had not up to that time been done. One thing further in this exhibit; picture A, upper left hand corner is looking toward the water plant at the northerly side or wing of the building and C, immediately below A, shows in a larger view the pumps in that water plant. I wanted to bring out the fact that there is really not any more sold outside than station lighting or some other actual company use, that is, there is not any overhead for selling this at all, it is really used by the company, only used by the water company instead of the electric company and the distinction between the water company and the electric company is not very wide; all practically under the same management.

(Photograph received and marked Exhibit P-28.)

Witness: Certain photographs were taken of the wrecked engine of the steam plant and they are shown on Exhibit P-28, and P-29. Referring to P-28 there is seen marked W in the upper and lower left hand photographs, little streak lines along the castings; those are weld lines from the previous break about a year ago.

This is the second annual break that is going on right now.

Q. Do you call that wrecks or breaks?

A. Breakdown, I should say perhaps. Certain of the parts are shown in various views. I might add with regard to the crank disc, some of it is there and some of it is inside the plant and some of it is down along the edge of the plant as indicated at F in Exhibit P-28.

(Photograph received and marked Exhibit P-29.)

Witness: P-29 shows two pictures of the wrecked engine, two pictures of the exterior of the steam plant and one picture of the interior of it. The purpose of the whole being to show the exciters which were the subject of considerable comment at a previous hearing, the fifty kilowatt hour engine driven set and the thirty-five kilowatt motor driven generator set.

Q. (By Mr. Brown.) When did you take those photographs?

A. They were taken at various times; certain of them were taken in August.

Q. From August until the present time?

A. Yes, sir, they were all taken by myself. They were not all developed by me or printed, but they are all O. K.

Q. (By Commissioner Osborne.) Anything further?

A. Yes, sir.

Q. Any more photographs?

A. No, sir.

Q. Why do you introduce these photographs; to show the inefficiency of the plant?

A. They are introduced to show the facts, the physical facts relating to the plant, for instance, the breakdown is shown there.

Q. When you introduced these exhibits, 25, 26, 27; what do you want us to infer from them; anything?

A. Yes, sir.

Q. In addition to the mere visualization of the plant; that it is efficient or inefficient or what?

A. Those photographs are pertinent, relative to the value. The hydro-electric plant is practically shed construction.

Q. The character of the construction, with relation to its value.

A. Yes, sir.

Q. All right, I get that; if that is the point.

A. Also the fact that the steam plant, not only as I say it is broken down, but it actually is. I do not think they would have questioned that anyhow, but I just wanted to make it real.

The subject of overhead costs and the relations of the High Pressure Construction Company was in, or was introduced by an exhibit presented by one of your engineers, Mr. Carver, at a previous hearing. The question of overheads, of profit and so on came up at that time relative to the relation between the High Pressure Construction Company and the various utilities that are managed by the same people who manage the High Pressure Construction Company. We find that in the case of the Electric Company, at least, there is stated to be work being done in 1915 under a contract that is reported in the report, but the actual fact as it has developed later, at least the statements are it was not done under contract but done merely on a sort of an understanding basis. As a result of that situation the contracting company is working for its own self as the utility company and seems to be treated very well by itself as the utility company. It is permitted to go quietly along for a period of four years and spend, alleged to spend at least, tremendous sums of money for

practically junk, junk as would be indicated by the record of the equipment and junk as would be indicated, I mean to say its record as to life and previous history and junk also as would be indicated by its performance. That High Pressure Construction Company sets up certain financial obligations which run into tremendously high figures, as indicated in —I haven't the exhibit now, and cannot remember the number—but I did cite an exhibit there which shows the bills of the High Pressure Construction Company and certain other matters of that kind and the interest which corresponds to them. Certainly a view from an exterior source relative to that sort of practice would seem not to be out of the way and I ask leave, if I may, to refer to the report of the Massachusetts Commission for 1920, the Utility Commission, only very briefly, if that meets with your approval.

Q. (By Commissioner Osborne.) To what end?

A. Merely to show how that situation is held, how that character of situation is held in other places besides your own State. That is, in other words, that the regard for it is held very low.

Commissioner Osborne: We do not have to go outside of the State of New Jersey or the practice of this Commission to find authority for condemning improper practices between a utility and a construction company when both are owned and controlled by the same people, or improper practices between them in any event. You may refer on the record, without reading it, to the book and the page, so we will have it.

Witness: Commissioners' Report for 1921, Massachusetts Department of Utilities, Volume 1, page 27, the bottom paragraph and the succeeding page.

Q. (By Mr. Starr.) Volume 7, did you say?

A. No, sir, Volume 1, page 27 and the succeeding page 28.

Commissioner Osborne: Let me see it now.

Witness: Your Honor, I had an analysis of the several valuations which have been presented, the said analysis being on the basis of cents investment, money investment per unit of sold, which is the kilowatt hours. There have been a number of standards of value offered on this property. For the sake of complying with your suggestion and saving time, would it meet with your approval if I present that in a full report which will speak for itself?

Commissioner Osborne: Any objection to that course?

Mr. Starr: We have no objection to that course if we are supplied with copies.

Witness: Yes, sir.

Mr. Starr: Before we cross-examine, so we may have that analysis before that is done.

Witness: You will have that at the same moment that it is sent to everybody else, right straight to Mr. Starr, if that is permissible.

Commissioner Osborne: You can submit this information in the form of a statement.

Witness: Yes, sir, in a more compact statement than I could make in this way.

Mr. Starr: We haven't any objection to that and will postpone cross-examination until we get it.

Commissioner Osborne: Were you ready in other respects to cross-examine this witness?

Mr. Starr: No. These exhibits furnished to-

day change the situation. They furnish the figures upon which the former exhibits were based and we desire to analyze those figures before we cross-examine.

Commissioner Osborne: You would not want to cross-examine today anyhow.

Mr. Starr: Oh, no.

Commissioner Osborne: Anything further?

Witness: No, sir, not beyond what I have asked leave to offer.

Mr. Brown: I just want to call to the Professor's attention some of the reports filed in regard to the salary account. There appears to be some difference between the exhibit you set up, Exhibit P-22 and those, and I would suggest, in the absence of counsel, if Judge Starr does not object, that the salary sheets for 1919, 1920 and 1921 be introduced.

Witness: In the same way, sir?

Mr. Brown: Yes, as one exhibit.

(Salary account, officers and office help, etc., apportioned to various companies, 1921, received and marked Exhibit P-30-A.)

(Salary account, officers and office help, etc., apportioned to various companies, 1920, received and marked Exhibit P-30-B.)

(Salary account, officers and office help, etc., apportioned to various companies, 1919, received and marked Exhibit P-30-C.)

Mr. Starr: Does that cover the Electric

Light Company, Senator?

Mr. Brown: And the Gas Company, I think.

Witness: The Water and Electric Light.

Mr. Brown: Most all of them.

Witness: That was only done because it was the most modern year, and for the sake of compactness, I will do it for 1920 and 1921, is that the idea?

Mr. Brown: Yes. I would suggest you compare them with your exhibit and see how the difference is accounted for.

Witness: I think I am leaving with you a duplicate set of exhibits.

Mr. Starr: There seem to be some lead pencil changes in this.

Mr. Brown: Those are ours.

Mr. Starr: So it is understood we are not bound by the changes in lead pencil; I do not know how it may affect the situation.

Witness: All that information in my hands is directly from your reports, which I believe are sworn to by your proper officers.

Commissioner Osborne: Are you ready?

Mr. Starr: We are ready to go on; we have a couple of engineers here. I understood from Mr. Ware there is no objection; we should go on with our case, in the absence of Mr. Miller.

Mr. Ware: That is all right.

Mr. Starr: We offer, in the first place, the annual reports of this company and also the monthly reports that have been filed since the Commission fixed the schedule of rates in

February, 1921, the monthly reports filed each month since that time; we offer those in evidence.

Leo Loeb, sworn on behalf of Millville Electric Light Company.

DIRECT EXAMINATION

By Mr. Starr:

Q. Mr. Loeb, what is your age and place of residence?

A. My age is thirty-seven; place of residence is Philadelphia.

Q. What is your profession?

A. Mechanical and electrical engineer.

Q. With what concern are you associated at the present time?

A. I am at the present time associated with Dey & Zimmermann, Incorporated, Engineers, been with them about five years.

Q. What is the business of Dey & Zimmermann?

A. Dey & Zimmermann conduct a general engineering business, including the design and construction of power plants and other engineering structures, the management of public utilities and service to industrial companies and to public utilities.

Q. How long has that concern been employed as you have described?

A. Well, my knowledge of course personally goes back only to my association, five years ago, but they have been in business some sixteen or seventeen years.

Q. Are you a graduate of some institution?

A. Yes, sir, a graduate of the University of Missouri and the Massachusetts Institute of Technology.

Q. Graduated when?

A. Graduated from the University of Missouri

in 1906 and from Technology in 1908.

Q. What experience have you personally had with reference to the valuation and management of public utility companies?

A. Well, my entire experience with Dey & Zimmermann, covering the past five years, has had to do with the design, construction, management and operation, rate cases and valuation.

Q. Have you testified before the Commission of Pennsylvania, the Public Service Commission?

A. Yes, sir.

Q. And what other utility commissions?

A. The Commission of the State of Kansas, Maryland.

Q. Have you ever testified in New Jersey before?

A. No, sir, this is the first time I have been before this Commission.

Q. With what public utilities have you been connected, that is, been employed rather, by what public utilities, to testify in rate cases or offer suggestions with relation to the management of utilities?

A. Well, practically all of the companies that Dey & Zimmermann manage and operate, some twenty odd in number, and a considerable number of private companies besides. Do you wish the names of some of those?

Q. If you please, yes.

A. Among those are the Overbrook Steam Heat Company—

Commissioner Osborne: I do not think we need the names of these companies. How would it mean anything or add anything? We will soon know when he gets into his testimony whether he knows his business or not without naming a lot of companies. He is qualified as an expert sufficiently.

Q. Have you personally examined the plant of

the Millville Electric Company?

A. Yes, sir, I made an inspection of the plant.

Q. When was that examination made?

A. At various times, beginning back in January, 1922, and more frequently since August, 1922.

Q. Please explain to the Board the power plant layout and the sources of power.

A. There are three sources of power of the Millville Electric Light Company. The first is that generated in their hydro-electric station and that power is generated at 2300 volts. The second source of power is that purchased at times from the Millville Manufacturing Company and that power is generated at 600 volts. The third source of power is that generated at the steam plant of the Millville Electric Light Company and that is generated at 6600 volts. All the sources are, of course, alternating current, but the voltage in each case is different. The power is distributed from the hydro-electric plant because that was the first station built and the distributing board is at that point. So all of the feeders radiate from that point, consequently the other two sources must first be transformed to a suitable voltage and then transmitted to that point for distribution. The point of this is that the company must bear the losses of getting those to that particular distribution point, that point being the first one in the history of the company.

Q. (By Commissioner Osborne.) You mean the people must pay the loss, pay the rate for doing that.

A. Of course, it must go into the rates, but there is a utilization of energy in between those two to provide being brought to one point and from there being distributed by one force.

Q. Utilization or loss?

A. It is a loss of energy.

Q. You said utilization.

A. It is a loss of energy.

Q. (By Mr. Starr.) What is the maximum generating capacity at the water plant?

A. The rights of the Millville Electric Light Company at the water plant cover the first one hundred and fifty horse power of water. That in terms of electrical output is a maximum of about one hundred kilowatts. The capacity of the steam station is five hundred kilowatts. The capacity of the energy obtained from the Millville Manufacturing Company is limited only by the transformers and the capacity of the company, of course, to furnish when they are not using it for other purposes.

Q. (By Commissioner Osborne.) What is the capacity, did you say, of the hydro-station?

A. The hydro-station about one hundred kilowatts and the steam station five hundred kilowatts; a total of six hundred kilowatts.

Q. (By Mr. Starr.) How is energy generated at the steam plant?

A. The energy at the steam plant is generated in an engine driven alternating current generator, five hundred kilowatt capacity.

Q. Describe the character of the switchboard in the hydro plant and the busses that are used.

A. In the hydro-electric station the general distributing board is made up of the board with two busses. That merely means that there are two sets of wires on which the energy from any of the three sources can be brought there and from that point distributed. The reason for having two sets of busses, as I understand from the situation, is that prior to a certain point the company did not synchronize the various sources, so that one particular feeder in the day time had to be on one buss and another particular feeder had to be on another buss in order to accommodate the load carrying capacity. The hydro-electric, generating with only one hundred kilowatts could not carry more than that, so the

proportion of load that came to that point equal to about one hundred kilowatts was put on one buss and the steam plant, when it was carrying the balance fed off of the other bus. However, following some experiments which one of our engineers and myself made, these two busses were synchronized and from about the date of October 26, 1922, the two plants were operated in parallel so that it was not necessary from that particular time to have any losses incident to the second buss or have any loss incident to not making the water wheel carry its full capacity.

Q. Why did you make that suggestion?

A. When I inspected the plant, I began to look around for points were certain economies might be made and seeing those two units were not synchronized I realized there would be a chance for economies. The extents to which those economies are possible—

Commissioner Osborne: That is being done now. Are we interested in the reasons? The answer to the last question in itself indicates why it was done. He says, to overcome the loss which was incident to the lack of being synchronized.

Q. In your judgment what will be the result of that one matter of economy to the operation of the company in the future?

A. I have estimated that that means an economy of substantially $1010 a year, saving in fuel.

Q. (By Commissioner Osborne.) That is being done; that is being saved now and has been for some time?

A. Since October 26th. This chart has been prepared—

Q. (By Mr. Starr.) Have you made a chart showing the saving on the present conditions as the result of the synchronization?

A. Yes, sir. I have made a chart showing how the saving is accomplished. I have not made a chart

showing how much that saving is at this date.

Mr. Starr: That is what I mean. I offer this in evidence.

(Chart showing combined load curve, September 13, 1922, received and marked Exhibit R-1.)

Witness: This is the load curve of the hydro-electric plant prior to synchronizing and shows the load that the hydro station had to carry when isolated on one of the two busses. The upper curve shows the additional load which the steam plant carried and that was on the second buss. Now the area shaded in red between a horizontal line across at about 90 kilowatts shows the amount that was lost through not being able to utilize the water power plant throughout the twenty-four hours. Just as soon as those were synchronized that became effective and the summation of that over the period of days in the year and the average flow in the stream represents a saving of $1010.

Q. (By Commissioner Osborne.) What is this book?

A. Just a compilation.

Q. It says "Testimony;" is it testimony or a report which you have gotten up?

A. It is not a report, no, sir.

Mr. Starr: It is for my information.

Commissioner Osborne: I thought possibly it was a report that could be used and filed with the Board.

Mr. Starr: I asked Mr. Loeb to furnish me the information on which my examination was to be based.

Commissioner Osborne: But they furnished

some kind of a report.

Mr. Starr: We have here schedules and we also have the appraisal report which we will introduce in evidence.

Q. Did you make a special investigation and examination of the steam plant?

A. Yes; that examination was made personally by me at that period and at a later period in conjunction with an engineer of the Rice & Sargent Company who manufactured, who built the engine which is installed at Millville.

Q. About when was that examination made?

A. There were two such examinations. The first one was made in August and the second one about the middle of October. Of course I spent a number of days down there; it was not just a single cursory examination.

Q. (By Mr. Temple.) Did you have a Rice & Sargent man both times?

A. No, sir, only one time.

Q. Which time?

A. The second time, he was there for about a week.

Q. (By Mr. Starr.) What have you to say as to the character of that equipment in the steam plant; is it obsolete or otherwise?

A. No, sir, it is not obsolete, equipment of the same character is being used in a great many steam plants today.

Q. (By Commissioner Osborne.) Is it efficient?

A. It is in certain respects only reasonably efficient.

Q. As compared with the present state of the art is that an efficient plant?

A. For plants of that size with certain economies that can be made that plant would be efficient, for plants of that size. That, Mr. Commissioner, is

a small plant and you cannot obtain the efficiencies there that you can in a large plant.

Q. It is not an efficient plant now then?

A. Not at the present time, no, sir.

Q. Is it the kind of a plant that you as an engineer would install if you were installing a plant?

A. That depends on the load conditions and the size of the property.

Q. On the load conditions you have to meet there.

A. Of course I prefer, under normal conditions, a steam turbine, but at the time this plant was built we had a different situation facing us, we had the war period and turbines were not obtainable within reasonable periods of delivery.

Commissioner Bacharach: How about 1920; it was not completed until 1920.

Witness: The equipment was purchased about—

Commissioner Bacharach: I know it took four years to build it; couldn't they in four years have obtained a turbine engine?

Witness: They could have obtained a turbine in four years, but I do not believe it took four years.

Q. They did not have any use for four years.

A. My knowledge is not that it took four years on that plant.

Q. I thought the testimony here was that it took four years.

A. That is not my knowledge.

Q. (By Commissioner Osborne.) How much does it cost to generate electricity in that plant?

A. At the present time, per kilowatt hour?

Q. Yes.

A. The exact figure for the year 1922, estimat-

ing of course the month of December, is something over two cents.

Mr. Starr: We have a chart and will introduce that information to the Commission.

Witness: The average cost of generating power at the steam plant for the year 1922 with the month of December estimated is 2.41 cents per kilowatt hour.

Q. How does that compare with the average cost of plants not of that type, but of plants generally supplying the same amount of power?

A. It is higher, because the engine is using somewhat more steam than it should and the auxiliaries are not as efficient as they might be.

Q. How much higher?

A. As a percentage or in cents?

Q. Both.

A. Of course that is a hard thing to answer because there is the question of coal—

Q. I want the result. I do not want you to analyze it. I just want the result. That is the way to measure efficiencies, by comparison.

A. If this plant was put in good shape—

Q. I am talking about now. We will come to the question of putting it in good shape later.

A. You mean an exactly duplicate plant with an engine like this?

Q. What plants serving other communities of like character, efficient plants are able to produce electricity for. You cannot expect the people to pay for an inefficient plant; no use wasting time on that or testifying to that. They are entitled to have an efficient plant and cannot be called upon to pay for inefficient operation. I want to know what the comparison is between this plant—they say it is not efficient; I do not know whether it is or not, therefore, I am asking you whether it costs more and if so how

much more to produce electricity in this plant than it would cost at a properly constructed, efficient plant serving this or any other community.

A. Exclusive of fixed charges, you mean actual production cost?

Q. I want to get right down to rock bottom, something definite and concrete; what would it cost to produce?

A. Fifteen per cent. less.

Q.It ought to be produced for fifteen per cent. less than that?

A. About 3 mills less, 2.1 to 2.2 per kilowatt hour.

Q. How is it they can buy the power so much cheaper?

A. They pay 3 cents per kilowatt hour for what they do buy.

Q. They do not buy it cheaper then?

A. No sir, not at the present time.

Q. One of these exhibits here—I may be taking a short cut—but I will give you the time you want later; I want to get a few things cleared up in my mind— One of these exhibits here shows a very high cost of production in the steam plant.

A. Yes.

Q. How much was that?

Mr. Brown: Exhibit P-2, 11 cents.

Commissioner Osborne: How much was that figure you showed for the steam plant cost?

Mr. Temple: Up around 11 cents, 1921.

Q. What about that?

A. That is due to the fact that in the total operating expenses of the power plant is the cost of labor and fuel for generating steam which is sold as steam and not as electricity.

Q. It is part of your by-product, isn't it, part of

your operation?

A. It is not a by-product, no, sir, that steam is sold without doing any electrical work whatever.

Mr. Temple: But you get that steam in the process of generating electricity.

Witness: No, sir, I beg your pardon.

Mr. Temple: If you wish to include the cost of producing steam then my answer would be 19 cents, if you are going to include that steam cost the answer would be 19 cents.

Commissioner Osborne: You say that is without steam?

Mr. Temple: Without steam it is 11 cents, about 11 cents.

Commissioner Osborne: All right, you go ahead. We will have to find out how he gets it.

Mr. Temple: While he is on that subject, would it be appropriate for me to ask how much he included for repairing the plant as it stands in junk shape now? Did you figure repairing the plant as it stands now?

Witness: The actual figures for the first eleven months of 1922—

Commissioner Osborne: You cannot start an argument. The only purpose of interrupting at this time must be to clarify the testimony. Now, go ahead. I do not want to take too much of your time.

Q. (By Mr. Starr.) Mr. Loeb, do you know of other electric companies that have equipment of the same character that is in the steam plant?

A. Yes, sir.

Q. Where are they located?

A. Equipment similar to what is used in the boiler room, Babcock & Wilcox boilers are universally used, in fact the Babcock & Wilcox Company is the largest manufacturer of boilers in the United States and the type of boilers installed in Millville is their standard type of water tube boiler. As to the engine room, the Rice & Sargent engine, is in size up to 1000 horse power very largely used.

Q. Did you make an investigation with reference to the operating efficiency of the steam driven generator in the plant?

A. I did not make a separate test of my own, but I had the company's operating records and the engineer of the builder who was brought on to give expert advice as to the condition of the engine made a test and I was present during the test and received from him and from the other sources the complete data on that test.

Q. Did you find any operations where economies might be effected?

A. Yes, sir.

Q. Explain in detail, please, the result of your investigation with respect to that matter.

A. In addition to the economy to which I have already testified, namely that of synchronizing the plant—

Commissioner Osborne: Are you through with the efficiency of your steam plant?

Mr. Starr: No.

Commissioner Osborne: This engine, type of engine and all about it? You are jumping now to your synchonizing of your buss board.

Mr. Starr: I did not think I was.

Witness: He asked me what economies could be made as a result of my inspection. I said in addition to the one I have already testified to—

Q. (By Commissioner Osborne.) Are you talking about the engine now or leaving the steam plant?

A. No. The steam plant. In addition to synchronizing, which is contributed to by the steam plant, I found the exciter at the steam plant was inefficient and that by installing a proper exciter a saving of about one hundred thousand kilowatt hours a year could be made in the use of auxiliary power consumption. Another matter which is not directly a saving, which indicates the situation, is that the steam meters on the engine were indicating incorrectly, in fact, were showing nearly double the amount of steam that the engine was actually using, and it was not until we made this twenty-four hour test that we discovered this siuation. For instance, in the month of November the actual steam used by the engine after the meters had been adjusted was 5,800,000 pounds, whereas if it had continued to be metered as before it would have been 10,800,000 pounds. That engine has been in the meantime charged up with this excess consumption.

Q. (By Mr. Temple.) Haven't the consumers really been charged up with it?

A. No, sir. The figures given you as to the amount of steam per kilowatt hour that the engine was using were based on the old records, 10,800,000.

Q. Should not the gas company have had much more of that charge then?

Commissioner Osborne: Make your notes and make your cross examination later, because it makes a very ragged proceeding if not only the Commission but counsel constantly interrupt. That is one of the prerogatives of the Commission.

Q. (By Commissioner Osborne.) Do I understand you to say,a few moments ago you made your estimate of the efficiency of this plant upon the records of the company?

A. Such records as the company had and then made an investigation to see how reliable the figures were.

Q. Was your estimate based in part upon the records of this meter?

A. I immediately noted that meter must be wrong and so reported to the meter manufacturers and they sent a man out to adjust it. It was evident to me that meter could not be correct.

Q. (By Mr. Starr.) The meter measured what?

A. The particular meter we are talking about measured the amount of steam which the engine received from the boilers.

Q. (By Mr. Brown.) What is the percentage of inaccuracy, if I may ask?

A. That particular meter read nearly twice as high.

Q. (By Commissioner Osborne.) The percentage he said. Nearly one hundred per cent.?

A. Yes, sir, based on thirty days for the month of November.

Q. (By Mr. Starr.) It has been testified by Professor Temple that one of the reasons for better efficiency in a turbine compared with an engine driven generator is the shaft exciter generally installed on the turbo-generator. Is it good practice to install shafte exciters on turbo-generators?

A. No,sir, not plants of this size.

Q. Why not?

A. The reason for it is that the speed is entirely too high to make a satisfactory operating situation. In some thirty-three different turbo-generators in twelve plants that we operate, which range in size from 300 to 10,000 kilowatts, there are only seven that are driven off the end of the shaft and these are in the main large units ranging up to 10,000 kilowatts. It is not our practice to put shaft end exciters on small turbo-generators.

Q. Is it practical to do that?

A. It is done, but we do not consider it good operation.

Q. Why not?

A. Because the speed of the exciter is such as to require very heavy repairs and a considerable outage, and in a plant of the size of the Millville Electric Light Company would not, in my opinion, be a practical installation.

Q. It has also been testified that the water rate or pounds of steam per kilowatt hour used by the engine is between 65 or 70 pounds or about 3 1-3 times what a generating unit of this kind should use. Have you made any tests of this engine or investigation to determine its water rate?

A. In conjunction with the engineer of the Rice & Sargent Company several twenty-four hour evaporative tests were made and during that period the amount of water fed to the boilers was weighed and metered and the steam isolated. The result of these tests showed that under the average load conditions obtaining in November the actual water rate of this engine was 29.1 pounds per kilowatt hour. That is the result of a single day twenty-four hour run under normal operating conditions. During a complete month of course the results would not be quite so favorable because you have the week end operation, the small load on Sunday and that brings the water rate up to a figure slightly above 33 pounds per kilowatt hour.

Q. What was the average water rate for the entire month of November?

A. For the entire month of November after the meter had been properly adjusted the average water rate was 35.6 pounds per kilowatt hour.

Q. That corresponds to how many pounds of coal per kilowatt hour?

A. 4.43 pounds of coal per kilowatt hour.

Q. Considering local conditions at the plant, the Millville plant, what improvement in the water rate, in your judgment, can be obtained?

A. Together with the Rice & Sargent engineer careful inspection of all the internal working parts of the engine was made. This inspection disclosed the fact that the steam valves of the engine were leaking. The repair of these valves—this work I understand is under way at the present time—will considerably reduce the steam consumed in the engine.

Q. Have you made any estimate of the net improvement?

A. Yes, sir.

Q. The percentage?

A. The net improvement in the quantity of the fuel burned will be 13 per cent.

Q. (By Commissioner Osborne.) How much?

A. 13 per cent. improvement in fuel burned. It will reduce the amount of coal consumption by that.

Q. (By Mr. Starr.) It has also been testified that the equipment of the steam plant is very unreliable. What have you to say with reference to that statement?

A. For the first eleven months of 1922 the engine was in practically continuous operation. It is shut down for a few hours on Sunday to make minor adjustments and repairs, but out of a week of about one hundred and sixty-eight working hours the engine is usually in service over one hundred and sixty hours. There is no spare machine so this engine bears the entire—carries the entire load at the station. In December a crank pin was broken on the engine and the engine has been under repairs since that time. That is due to the fact that there is no other unit to carry the load when major repairs are made on this machine. But the factor of utilization in the first eleven months was ninety odd per cent.

Q. (By Commissioner Osborne.) What was it in the preceding year?

A. 1921? I can only give you an approximate figure, Mr. Commissioner. It was approximately sixty per cent.

Q. What was it in 1920?

A. 1920 it was higher, approximately seventy per cent.

Q. What was it in 1919?

A. It was not operated. It was only installed in 1920.

Q. Do you know the history of the engine?

A. In a general way. It was originally installed in one of the plants of the Connecticut Company in New England.

Q. When?

A. I do not know the date of installation.

Q. How old is the engine?

A. The engineer of the Rice & Sargent Company told me that the engine was approximately twelve years old. I would not want to swear to that, because that is hearsay.

Q. Where did you hear that?

A. About two months ago when I made an inspection with him. That is hearsay, however.

Q. Then it was a second-hand engine when these people bought it and installed it?

A. Yes, sir, it was bought during the war time, a second-hand engine.

Q. Do you know what it cost?

A. No, sir. We have a record of that, however. In the first eleven months of 1922 it generated 1,512,000 kilowatt hours and only 178,000 kilowatt hours were purchased. That is the record for eleven months of 1922. But of that 178,000 that was purchased, 44,000 was an interchange arrangement because of certain low water conditions that the Millville Manufacturing Company wished to take advantage of, so

that the actual amount that was purchased in eleven months in order to supplement the engine was about 134,000 or less than one-tenth of the amount that the engine generated. That indicates a fair reliability for that engine in that period.

Q. How does its history in those three years of its operation compare with a modern type turbine generator?

A. The percentage of outage for three years is higher than the turbine would have in the first three years.

Q. How much higher? When you say it is higher that don't mean anything unless I get the figures.

A. That is a very hard thing to say. At the end of from five to eight years a turbine would have to be re-bladed and its outage might be anywhere from thirty to sixty days. At the end of some period in the fifth to eighth year each one of these machines operated a great number of hours must of course go out of service for major overhauling and repairs. In the cotton mills in New England they think the engines are more reliable than the turbines. In our own experience we find every five to eight years a turbine must be completely re-bladed and that is a long and expensive operation.

Q. That puts the entire plant out of commission?

A. That puts the entire machine out of commission. There must be a spare unit. Sometimes that can be done in the plant, but in the case of the larger machine—

Q. They have not evolved any way where they can re-blade it like you take a blade out of a safety razor?

A. No, sir, we have not gotten that far yet.

Q. That is, just lifting out part of the machine.

A. These blades revolve at a peripheral speed of over a mile a minute.

Q. They are on a shaft?

A. Yes, sir.

Q. Couldn't you lift that shaft out and put another shaft in while the re-blading process is going on?

A. But that shaft with all its blading is over one-half the cost of the machine. Would you want the utility to carry another spare? You would tie up that much money for two or three months' operation, but the stationary part of the machine also has blades, so you would have to have a spare for the whole machine; that means another unit.

Q. That means another unit then to take care of the situation, generate your electricity while your machine is being re-bladed.

A. Yes, sir, and every utility today tries to keep a machine equal in size to its largest unit.

Q. As a spare?

A. Yes, sir. It is not always possible.

Q. Has this company any spare unit?

A. No, sir, this is the only unit it has. That becomes a greater burden on a small company than a large one.

Mr. Brown: The Providence Engineering Company says this engine was shipped twenty years ago from Providence.

Witness: I told the Commission I was only answering by hearsay.

Q. (By Commissioner Osborne.) Do you know who made the engine?

A. The Rice & Sargent Company of Providence.

Q. Now the Providence Engineering Corporation?

A. Yes, sir; they have been merged.

Mr. Starr: Mr. Franklin tells me that engine was built in 1902.

Witness: There are engines in operation in

New England today that are sixty years old, built by George Corliss, who was the inventor of this type of engine.

Q. (By Commissioner Osborne.) You did not tell me how the time out or whatever term you used, compared with other plants.

A. In 1922 the outage, percentage of outage was lower than the average plant.

Q. You did not tell me how much lower. I always like to have an answer to a question.

A. The percentage of outage in 1922, for eleven months of 1922, was less than ten, about eight per cent.

Q. But it is out now.

A. That means another eight, we are going to include that, that is sixteen per cent. for that particular year. Turbines one year old operate about seventy-seven per cent. of the time, that is by and large. Turbines two years old operate between fifty-five and sixty per cent. of the time, and so on; as they get older the percentage of operating time becomes less.

Q. Now go on then with that schedule and pretty soon, in a short time the turbines will be out most of the time.

A. In a survey made recently in New York City turbines over eight years old were operating less than ten per cent. of the time.

Q. In New York City?

A. Yes, sir.

Q. A utility plant?

A. Yes, sir, turbines over eight years old. The tendency is always to operate the older machines a less and less portion of the time. They do not get any better.

Q. Is that because of the breakdown of the machines or the necessity for repairs, or because of a spare unit they were operating?

A. A combination of all those circumstances. The newest machine is always the best machine as a rule.

Q. Of course, after you have broken it in.

A. As each machine gets older the defects on both mechanical and electrical end increase.

Q. They are rather inefficient insofar as the ability for continuous use is concerned?

A. That is true because the art has developed so rapidly. The turbine is a new machine.

Q. I say it is inefficient.

A. No, sir, not inefficient. It is evident from the fuel consumption standpoint that it is extremely efficient.

Q. What we are interested in is the cost to the ultimate consumer.

A. Yes, sir.

Q. All these by-ways we tread in reaching our ultimate destination are interesting, but we must not lose sight of the fact that when we are talking efficiency and inefficiency, what we want to find out is how the public is going to get this service the cheapest. Will they get it cheaper with this steam plant, this twenty year old engine, taking into consideration the breakdowns and everything, or will they get it cheaper from a different type of plant operating with more or less efficiency, as your judgment might seem to indicate.

A. My judgment, of course, is that a turbine plant at Millville would be at this stage more efficient than the engine plant, but we cannot always go back on hindsight.

Q. (By Commissioner Bacharach.) As a matter of fact don't they usually have an extra turbine or another unit because of the decrease in coal consumption, that it really pays to have another unit.

A. Not until you have loaded up everything you have in the plant.

Q. I mean a turbine is much less expensive to maintain and run, not for maintenance, but for coal consumption.

A. As a rule, yes, sir, particularly in the larger sizes.

Q. (By Commissioner Osborne.) You said thirteen per cent., didn't you?

A. No, I said this plant could be made to save thirteen per cent. I said you could save at least fifteen per cent. of all expenses.

Q. In other words, you could save fifteen per cent. on the cost of power to your consumer if you had a different type plant?

A. Exactly. That is exclusive, however, of fixed charges.

Q. That is the best you could do?

A. For this Millville situation, because that is a small town. It has, as you see, from that curve, a peak lighting load which exists for a very short time in the late afternoon hours; during the rest of the day it is carrying an extremely low load.

Q. Who do they purchase this power from? They seem to be able to get as much of it as they please.

A. May I add, that during quite a few hours of the day, namely from six in the morning until five at night and again from eleven at night until six in the morning, the load is only 290 kilowatts. This is during the fall when they have a lighting peak. It is only during the hours that the average residential customer and commercial customer requires lighting that the peak comes up to the capacity of the machine, but the machine has got to be big enough to swing that load. Of course it is inefficient.

Q. That is true in every situation.

A. Yes, but it is an extremely poor load factor. The average plant in a town of any size has a peak that extends throughout the day because the power

customers are using power at that time. You had another question.

(Question read as follows.) Who do they purchase this power from?

Witness: They purchase this power from the Millville Manufacturing Company, which is a cotton mill.

Q. Who operates that, the same people?

A. No, sir.

Q. That is entirely independent?

A. That is a different company.

Q. Different people own the control of the company?

A. As far as I know. Of course I did not make any investigation.

Q. You don't know anything about that?

A. I know it is an entirely different company.

Q. I want to know whether the same interests control them both.

A. I am not competent to testify on that.

Mr. Starr: That is not a fact.

Witness: As far as I know they do not.

Mr. Starr: They are antagonistic, as I understand it. They are part of the same family, but not friendly.

Commissioner Osborne: The point in my mind was this; if the manufacturing company did control, was controlled by the same people it might make the necessity for the spare unit less apparent, because they could always get what additional current they needed in an emergency.

Mr. Starr: As I understand they only sell the current when they have an excess over their own use.

Witness: I suppose this company has gone along on that theory. They only have one unit, and therefore only have fixed charges on one unit, because they have been able to get breakdown service.

Q. (By Mr. Starr). Do any other economies suggest themselves to you that may be effected?

A. Yes, sir. There are some minor economies which have to do with the operation of the existing equipment. For instance, the transformer between the busses at the hydro station and the steam plant are larger than are required at the present time. By using two transformers instead of three they would cut down the total losses that accrue as the result of having transformers at all, by one third. There are several minor economies of that sort that can be made, but the effect of these in dollars is not very great, some four hundred dollars a year on these minor economies.

Q. (By Mr. Brown.) Before you get away from the point, if you will excuse me, Commissioner Osborne requested or asked what the saving would be and you said fifteen per cent. Did you mean the saving of fifteen per cent. would be saved by installing a turbine or by the economies that you suggest?

A. Thirteen per cent. was the economies, thirteen per cent. of fuel. Do you understand that?

Q. (By Commissioner Osborne.) Your economies represented a saving of what per cent.

A. Thirteen per cent. of fuel.

Q. I mean altogether, your economies.

A. Yes, sir, thirteen per cent. of the coal burned. I could not save anything on the labor. The economies that I point out could result merely in burning less coal in this plant.

Q. Thirteen per cent?

A. Thirteen per cent. of the coal bill.

Q. And the economy by an efficient plant would

be fifteen per cent.?

A. Fifteen per cent. of the total cost. Thirteen per cent. of the coal bill.

Q. If you cannot point out any other, that is the total.

A. The coal bill is not the whole cost, so it is not thirteen per cent. of the whole. It may be nine or ten per cent. of the total.

Q. There is no use giving us one percentage on one basis and another percentage on another basis, when you can synchronize the two. Give us something that means something.

A. Nine per cent. total operating economy as the result of this decreased fuel consumption.

Q. As compared with fifteen per cent. total?

A. Yes,sir.

Q. On an efficient plant.

A. But that fifteen is a figure of judgment entirely. I do not have any detailed figures to support that.

Q. But you have a good deal of experience back of it.

A. I have been in a number of plants, yes, sir; I have designed them and built them.

Mr. Starr: Has that topic been exhausted? I am going to start on something else.

Commissioner Osborne: I do not know whether it has been exhausted or not. It has been clarified for the time being.

Q. (By Mr. Brown.) Can you tell what the saving would be by putting in a turbine plant?

A. In this station?

Q. Yes.

A. I have made some such figures, but I do not believe I have them here with me.

Mr. Starr: You mean to junk the present

plant and put in a new turbine plant?

Mr. Brown: Yes.

Witness: That was one of the first things in this situation as I saw it and I made an estimate of it and the cost of it and the probable cost of operation based on the then price of coal. I do not happen to have those figures with me. I can get those. That, of course, is a simple matter for an engineer to estimate in advising his client.

Q. (By Mr. Starr.) Can you run a turbine unless you are supplying current for its entire capacity, can it be operated economically?

A. Well, I take it you mean will a turbine be economical every hour in the day, is that what you mean?

Q. Yes.

A. To no greater extent than an engine. A turbine has to meet this peak load situation just like an engine does and during, let us say nineteen hours a day, a turbine at Millville would operate inefficiently compared with its ability to operate during the five hours.

Q. (By Commissioner Osborne.) That is the same in either machine.

A. We have a low load factor imposed by the conditions at Millville.

Q. That is true in either machine.

A. There is very little power load at Millville. It is a lighting load. That is what accentuates it.

Q. (By Mr. Starr.) Isn't that the fundamental difficulty, the fact that the load is not present during the entire twenty-four hours?

A. Exactly. The principal load is a lighting load and that lighting load in the first place has a few number of hours of duration and in the second place varies from season to season, being less in summer months than in the winter months.

Q. Have you prepared a chart showing graphically the operating results of the Millville Electric Light Company during the past year 1922?

A. During the past year? I have prepared one clear back to 1917.

Q. 1917?

A. Yes, sir.

Q. Have you the chart there?

A. Yes, sir.

Mr. Starr: I ask that be marked, please.

(Chart showing division of meter production by sources and amounts sold, lost and used by company for years 1917 to 1922 received and marked R-2.)

Q. (By Commissioner Osborne.) What is it? It shows the division of meter production by sources?

A. And the amounts sold, lost or used by the company for the years 1917 to 1922. Take any particular year, like 1919, and on this schedule of kilowatt hours, the left hand side, the left hand block shows the source of all the energy in 1919 and that 600,000 kilowatt hours or 39.8 per cent. was generated at the hydro station and in that year the remainder up to about 1,400.000 was purchased from the Millville Manufacturing Company, 60 per cent. Of that total amount generated and purchased the uses are shown by the right hand column, which shows, beginning at the bottom the amount that the company used, 1.1 per cent., a small amount for lighting its own business; losses in the system about 11.5 per cent. and the amount sold 87.4 per cent. I picked out that particular year, because that is the last year that they purchased their principal requirements. Following that the steam plant was put into operation and the charts from there show the introduction of this additional block of energy which is generated, and as before, the utilization of that

energy. There are several rather interesting things here; in the first place, a very great increase in the requirements between 1919 and 1920 which might not have been made by purchasing power from the industrial, therefore the company provided a unit, and after it was in service it generated 47 per cent. The next year it had operating difficulties and it generated a smaller percentage.

Q. (By Commissioner Osborne.) Why did it have those operating difficulties?

A. Of course I was not present. I can only tell what I was told and that was that through some difficulty with the condenser the engine got water in the cylinders instead of steam.

Q. Might that have been due to being an old engine that was no good, worn out?

A. Oh, no, not at all, sir.

Q. That might happen to any engine?

A. With that type of condenser, yes, sir.

Q. Then the trouble was with the condenser.

A. No—

Q. What was the trouble?

A. It is an operating difficulty that happens just every so often.

Q. To every plant?

A. To any plant, most any plant. You cannot say it has happened to every plant.

Q. Every efficient plant?

A. Yes, every efficient plant will have a wreck every so often. There is a falling down of the human and mechanical elements.

Q. (By Mr. Brown.) Wasn't it the fact that the pin you spoke of became so worn that a bushing was put over the pin and the metal then broke?

A. We are talking about 1921 when the accident was the result of water in the cylinders, so I was told.

Q. Isn't that how it got in there?

A. The water? No, the metal pin would not put water in the cylinders.

Commissioner Osborne: The pin accident I think is the last one.

Witness: That is 1922.

Commissioner Osborne: We are talking about another one.

Witness: Yes, sir.

Q. (By Commissioner Osborne.) I notice the amount, percentage sold, decreased.

A. Yes, and the total amount increased tremendously.

Q. The percentage of the total amount you sold ought not to decrease.

A. It decreased because now you have a steam station and in order to operate the steam station you have to operate auxiliaries. You have heard a lot of testimony about these auxiliaries. There must be auxiliaries.

Q. It is due to the operation of the steam station that you are able to sell less electricity?

A. Of the amount you generate, because the station itself must have something for its own use.

Q. Because a steam station is not as economical to operate as a hydro station?

A. From the auxiliary standpoint it requires more auxiliaries, it has a condenser.

Q. Of course that is equally true of the amount of power purchased, purchased on favorable terms.

A. They have that situation that they must meet in the same manner.

Q. So it is because of the necessity of the installation of the steam plant to augment the previous service, that the percentage of power sold is less.

A. Yes, but of course the total amount sold is greater, as you can see.

Q. I understand that. Would the reduction in percentage have been the same regardless of the type of steam plant you put in?

A. Very nearly, sir. Of course different schemes of layout might have changed that just a small percentage.

Q. I take it that with the amount of power purchasable being limited, the amount of power that you could generate by your hydro plant being limited, the only other method of getting additional power is by the installation of a steam plant.

A. By another unit.

Q. Steam plant?

A. Steam plant. There is no more hydro-electric energy in that territory.

Q. It merely becomes a question of the type of steam plant to put in.

A. Exactly. That is a matter of judgment and market conditions at the time.

Q. The next year, 1921, I notice a still further reduction in the amount of power sold, the percentage of power sold.

A. Yes, sir.

Q. How do you account for that?

A. Because the auxiliaries must operate every hour the engine operates, whether the output is large or small, the auxiliaries take very nearly the same amount, consequently with a reduction in the total business, because of the post-war depression, the engine ran a lesser number of hours.

Q. I notice you operate in 1922 at a still greater loss in the percentage of power.

A. In percentage of power sold, yes, somewhat greater.

Q. Pretty near ten per cent.

A. Yes, sir.

Q. Sixty-seven instead of eighty-one over there in 1920.

New Jersey State Library

A. Yes, that is true.

Q. How do you account for that?

A. During the past year the system has been very much extended, they have added a lot of lines and services, and the losses that take place outside of the plant have increased. Then another thing that has happened is—

Q. The losses have increased about two per cent.

A. About two per cent. Another thing is, I find the company did not have complete meters in this period. They have been adding more and more meters, they have been adding more auxiliary equipment, they put in some coal handling stuff.

Q. How do you account for this increase in power used from six to nineteen per cent.?

A. The increase there is due to the fact that the steam station did not operate the whole year, otherwise they would have purchased only an amount comparable to that, just the Sunday inspection.

Q. Wouldn't it be more economical for them to purchase more power and generate less?

A. No, because this would go on just about the same, you would be faced with these auxiliaries just about the same.

Q. They sold a greater proportion of their product when they were purchasing more of it.

A. Yes, but this is obtainable at 2.4 cents and this is obtainable at 3.1 cents, so you have the cost factor to consider.

Q. When you said it is obtainable at 2.4 cents—

A. That is the actual average for twelve months.

Q. Does that make a charge for the power used in those auxiliaries?

A. That is, I think the net cost.

Q. Then that does not represent the real situation.

A. It does not represent the cost per kilowatt hour net send-out, if that is that figure.

New Jersey State Library

Q. That is what we are interested in, the cost per kilowatt hour, net send-out.

A. The cost per kilowatt hour produced, I beg your pardon. I have a figure here, cost per kilowatt hour, steam, gross as 4 cents, but I am not sure that it is that figure. I think that is the proportion of steam sold. We can soon tell if we divided 2.4; it would be just under 3 cents, because it is 2.4 divided by 80 per cent. and that is just about 3 cents.

Q. (By Commissioner Bacharach.) It would make it almost 3 cents?

A. Yes, per kilowatt hour actual net send-out.

Q. What is it you pay for it?

A. 3.1.

Q. (By Mr. Brown.) Is that breakdown service 3.1?

A. That is the amount they are being billed at the present time.

Q. That is breakdown service. If they should buy over a constant period—

Commissioner Osborne: What is the regular rate?

Witness: That is the regular rate. They can take it whenever they need it, whenever they want it. It is not a sliding scale, it is a fixed rate of 3 cents plus a demand charge and averages 3.1.

Q. That is when they break down they can get it for that. Do you know whether or not they could not contract to get it uniformly?

A. I had no negotiations with the other people. I don't know that. I might say, however, that there is a street car system in Millville and that street car system purchases at something over 3 cents and they are taking it continuously from this same source.

Q. (By Commissioner Osborne.) The Millville

Manufacturing Company?

A. Yes, sir. Apparently that is not a breakdown rate. That must be a standard rate they have established. It happens it serves the purpose of a breakdown power here.

Q. (By Mr. Brown.) Do you mean to say the standard rate and the breakdown rate are both the same?

A. So I have been told. I have been told the street car company pays the same rate and they use it continuously, from the Millville Company, but again that is a thing that I did not investigate.

Q. (By Mr. Starr.) Mr. Loeb, these auxiliaries you speak of, the condenser and the exciter, if they were not operated by electricity, what would be necessary to have them operated?

A. If they were what?

Q. If they were not operated by electricity how could they be operated?

A. Have to be operated by steam.

Q. Which would be less expensive, steam or electricity?

A. Normally in our design of plants we balance the steam and electric, but as against all of one and all of the other electric operation is usually cheaper. That is a technical question I do not want to burden the record with, but there is need for a certain amount of steam in every company to get feed water and as easy a place to get that as anywhere else is from the auxiliary. You can over do the thing and make them all steam in which case it is a good deal worse than electric.

Q. In this particular plant would it be more economical to operate the auxiliaries by electric power or by steam?

A. There is already a combination there, some steam and some electric.

Q. The particular auxiliaries operated by elec-

tricity—

A. They should continue to be operated by electricity, the condenser and the spray pump and the exciter should be operated by electricity or belted to the shaft.

Q. Anything further you desire to say with reference to Exhibit R-2?

A. Except as it leads up to the next one.

Mr. Starr: What time will we take an adjournment?

Commissioner Osborne: We will go on perhaps for twenty minutes or more until they finish in the other room so that we will not have to come back this afternoon. We thought the time this afternoon would be so short we better go as far as we can this morning and then take an adjournment.

Q. In reference to Exhibit R-2, in your judgment are the percentages of energy lost high for the kind of plant they had to build there?

A. The percentage loss has been quite consistent around eleven and a half per cent., except one or two years and that can probably be charged to inaccuracy in metering. In our own experience we consider a town spread out as much as Millville is, Mr. Commissioner, would not be inefficient from the loss standpoint if it lost in its distribution system as high as twenty or twenty-one per cent., in fact we have some that go nearer thirty.

Q. (By Commissioner Osborne.) I hope we haven't any around New Jersey like that.

A. Yes, you have lots of them. If you will analyze the total output of your station and subtract from the customers, that is, metered to the customers, you get a percentage of loss that is up to that point. Of course that is not all lost; customers' meters are more likely to be low than high.

Q. You cannot make them believe that.

A. I know you cannot, but it is very true though. So it throws what is really a use into a loss. As to the percentage of auxiliary consumption, that depends upon the layout. Millville has no source of condensing water. With your familiarity with public utilities you know an adequate supply of condensing water is necessary to efficient operation. That is why the Public Service builds its plants, one reason why the Public Service builds its plants at tidewater, they can pump from Newark Bay. It takes 2 gallons of water per minute for every kilowatt hour which you generate, so you can see when you come to a large plant you need a large amount of water. You can always haul coal to a plant, but you cannot haul water to it. This particular plant in order to get condensing water has to cool that condensing water artificially, has to spray it through nozzles in the form of a thin mist or spray, and through the evaporation of a portion of that water the balance is cooled. If you put either in the palm of your hand, evaporation cools the whole thing. In order to spray it of course you have to do work on the water, put it through a pump and pump it against pressure. You have never been down to Millville, I take it?

Commissioner Osborne: Never through the plant.

Witness: You can see the spray pond from the railroad as you go back, a big concrete reservoir that has a number of spray nozzles. Another place where you will see it is the Hyatt Roller Bearing plant in Newark. It takes pressure to put that water through and of course to develop pressure and pump water it takes work and that is all in this factor of company uses. If you went on Newark Bay and did not have to spray water you would cut that in half. So all of these things tie in to the local situation.

Q. (By Mr. Starr.) In your judgment is the motor which drives the condenser pump too large?

A. No, sir, it has to be that big or it would not do its work.

Q. Explain why you have come to that conclusion.

A. That pump has two functions to perform. It must circulate the water through the condenser so the engine obtains the vacuum you have heard about and it must also pick the water up from the basement under the engine room and force it through these spray nozzles and that requires an amount of power. That outfit was designed by a reliable manufacturer and they know their business and they put the right size motor on it.

Q. It has also been said by Professor Temple that the engine which drives the exciter is too large and very inefficient. What is your opinion with reference to that situation and state your reasons please.

A. It does not make any difference, because that engine is only used a few minutes to get the plant going. An exciter is sort of like the tail wagging the dog. You have to get the exciter working before you get the main unit running.

Commissioner Osborne: Like a starter on a car.

Witness: Yes, exactly. Anyway you cannot of course run a motor exciter if you have not any power for the motor. Every plant must have, every steam plant must have a steam driven exciter and the procedure is to run that a few minutes until the big engine is on the line and then start the motor exciter which is more efficient. Just a few minutes out of the total number of hours in the week cuts no ice in the efficiency of the plant. I did not investi-

gate to see whether it was an economical engine or not, because it does not make any difference.

Q. (By Mr. Starr.)Have you prepared a chart showing graphically the effect of the economies which you have suggested and which you have testified about?

A. Yes, sir.

Mr. Starr: I offer that chart in evidence. (Chart showing load, energy sold, used and lost and production costs, classified by accounts, received and marked Exhibit R-3.)

Witness: The left hand column of this chart is a reproduction of the right hand column in the chart that just left us. In other words, it is the existing situation for 1922 and shows, as the other did, how much was generated by steam, how much by hydro and how much was purchased. It is a reproduction of this thing here that we just left. The next column to the right is the situation as it would have been if the economies that I have pointed out had been made effective, and the total height below that point is the total saving and the various percentages here will show what could have been accomplished and the size of the block is the measure of that accomplishment. Starting at the bottom, the auxiliary consumption would have been reduced from eighteen and a half to 15.8 per cent. The lighting, company lighting would have been unchanged, of course. The bleachery transformer losses would have been unchanged. The power transformer losses unchanged, the distribution apparently increases in percentage, but that is because the total which you divide by is less whereas the

actual quantity of loss remains the same. The same is true of distribution. So the economy is that which you make in the auxiliaries and in power transformers. The next two sets of columns translate that sum into dollars. This is the distribution of costs at the steam station for 1922 based on eleven months actual, or ten months.

Q. (By Commissioner Osborne.) Where is that?

A. The right hand column of which the yellow shaded portion represents the credit for steam sold to the Cumberland County Gas Company, the balance then being the net production cost. The distribution of that according to the classification of accounts of this Commission is shown to the left, namely repairs, supplies, fuel, labor, purchased energy and the similar costs of the hydro station. If these economies that would have reduced the kilowatt hour output had become effective in dollars they would have made a total saving of that amount which in all I think is about sixteen hundred dollars.

Mr. Temple: I hope it will not be out of the way if I ask one question. Can we have the supporting data for those things, the exhibits which underly this and the data which underly this?

Commissioner Osborne: Are you asking a question?

Mr. Temple: I am asking if we can have the underlying data for these exhibits.

Commissioner Osborne: Can you furnish that?

Witness: Yes, sir, absolutely.

Mr. Temple: How those facts were obtained?

Witness: Yes, sir. I have worked that all out, Professor Temple.

Mr. Temple: May we have it?

Witness: Yes, sir. As soon as I have a chance to put it in shape for you.

Commissioner Osborne: It is quite apparent we cannot finish today.

Mr. Starr: No, we will not finish today.

Commissioner Osborne: How will next week suit you?

Mr. Starr: If it is Tuesday of next week, Tuesday I have a contested will case in Mays Landing and also a trial before Vice Chancellor Ingersol.

Commissioner Osborne: I judge next Tuesday will not suit you very well.

Mr. Starr: I do not see how I can possibly be here.

(Informal discussion as to adjournment.)

Commissioner Osborne: Suppose we put it down for the 23rd.

Mr. Temple: I do not know anything about Mr. Miller. He asked me over the phone to tell him afterwards. I do not know anything about his plans, but I will tell him that.

Mr. Starr: If it does not suit him we will make some other arrangement.

Mr. Temple: I know he is anxious to have a conclusion reached because of the situation. I am sure he will make that suit.

Mr. Starr: May I ask this: Your Honor suggested that we were short and wished us to submit copies of the exhibits. How many copies do you want?

Commissioner Osborne: Six altogether.

How much more testimony have you?

Mr. Starr: We will finish with Mr. Loeb and we have another engineer who made an actual valuation of the plant. We will put Mr. Franklin on the stand and ask general questions and the accountant for the company.

Commissioner Osborne: You will probably finish in one more day.

Mr. Starr: I should say so. I imagine the cross-examination of Professor Temple will not be very lengthy.

Mr. Brown: May I suggest this: In view of some correspondence with the Board it may be well for this company to enter into negotiations with the manufacturing company to see what price they can buy the power at.

Mr. Franklin: Judge, you don't know what you are talking about. You don't know what you suggest. It is an impossibility.

Mr. Brown: I thought maybe it might be undertaken, from a letter we received from them. Have you made any efforts?

Mr. Franklin: It has been tried for three years.

Commissioner Osborne: We do not consider it our function to manage these utilities. That is the function of the managers of the utilities. They are elected by the stockholders for that purpose.

Mr. Starr: An effort has been made in good faith for three years to get some contract, definite contract.

Witness: We are trying now.

Commissioner Osborne: All we can do is to say they must be managed efficiently or they will take whatever consequence the statute enables us to put upon their head.

(Adjourned until Tuesday, January 23rd, at the State House, Trenton, N. J., at 11.00 A. M.)

BOARD OF PUBLIC UTILITY COMMISSIONERS

Trenton, N. J., Tuesday, January 23, 1923.

IN RE INVESTIGATION OF RATES MILLVILLE ELECTRIC LIGHT COMPANY.

Before Commissioner:
HARRY V. OSBORNE, Esq.

For Millville Electric Light Company, appears:
LEWIS STARR, Esq.

For the City of Millville, appears:
LOUIS H. MILLER, Esq.

S. J. Franklin, sworn on behalf of Millville Electric Light Company.

DIRECT EXAMINATION

By Mr. Starr:

Q. Mr. Franklin, what is your official connection with the Millville Electric Light Company?

A. I am General Manager.

Q. How long have you been General Manager?

A. Twenty years.

Q. When did you commence building the steam electric plant or station?

A. In July, 1916.

Q. What was the source of the current which was generated for the benefit of the company prior to that time?

A. It was made from water power and from gas engines, down in the old plant on Sharp Street, and at times purchased a very small amount of current, from the Millville Manufacturing Company.

Q. When was the steam electric station put in operation?

A. February 1st, 1920.

Commissioner Osborne: How many years did it take to develop it?

Mr. Starr: It was about two years and a half, three years and a half.

Q. What was the occasion or reason for the delay in the completion of the steam plant after you started building it?

A. There were two reasons: One was the inability to secure material promptly and the other was the inability to secure money promptly.

Q. When were the boilers purchased?

A. July, 1916.

Q. When was the engine purchased?

A. April, 1916.

Q. When did you buy the engine driven exciter?

A. January, 1917.

Q. When was the motor driven exciter purchased?

A. March, 1920.

Q. Do you know when the Millville Manufacturing Company installed the 1,000 KW. machine?

A. December, 1914.

Q. When did they install the 2,500 KW. machine?

A. December, 1919.

Q. Have you any knowledge as to the load which the Millville Manufacturing Company are carrying on the 1,000 KW. machine?

A. Their engineer told me they were carrying 1,300 kilowatts.

Q. And what on the 500, on your own 500 KW. machine?

A. That is their 500 machine.

Q. Their own 500 then.

A. 600 kilowatts.

Q. What was the reason for building the steam electric station, why did the company do that?

A. Well, there was a demand for more current than the hydro station could furnish, and there was no certainty of receiving, buying any current from the Millville Manufacturing Company. Their machines were overloaded and they told us they wanted us to get off of their machines and put in one of our own.

Commissioner Osborne: He said "they told us." Who does he mean?

Witness: The Millville Manufacturing Company, Mr. Lewis, the Manager.

Q. (By Mr. Starr.) That is the concern from which you were getting the extra current?

A. Yes.

Q. Was it possible to increase the output from your hydro electric plant, your plant?

A. No, sir, it was not.

Q. Why not?

A. Because we had an agreement with the Millville Manufacturing Company whereby we were entitled to take 150 gross horsepower or 100 net horsepower from the water power in the lake, and no more than that. We did for a while try to increase that with gas engines, but it did not furnish satisfactory service.

Q. Where did you locate the steam station?

A. Where?

Q. Yes.

A. On the railroad track just south of the Gas Company's plant.

Q. Could you have installed the steam station at the hydro plant?

A. No, sir, we could not.

Q. Why not?

A. We had no land there and could not buy any land. We could not get a switch in there if we had the land, because it was all owned by the Millville Manufacturing Company and they positively refused to allow us to put a switch in there or use their switch.

Q. What was the area of the land controlled by the Electric Light Company at the hydro station, do you recall?

A. Well, about 50 by 100 feet, something like that.

Q. Not large enough to install a steam plant?

A. Nowheres near. It was all built on at that time, anyhow, it had the buildings of the hydro plant on it.

Q. Was the machinery used to equip the steam plant new or second-hand?

A. Second-hand.

Q. Why did you purchase second-hand machinery?

A. Because we could not get new machinery, either turbines or engines or boilers within from two years to thirty months, could not get any promises of delivery in about that length of time.

Q. Where did you acquire the equipment, where did you get it from?

A. We got the engine from a little town down on the New York, New Haven & Hartford, around New Haven; I cannot remember the name of the place, a little ways out in the country. It had been used for running a street lighting system with. That is where the engine came from. The boilers came out of the City Hall in Philadelphia.

Q. Generally, what was the condition of the equipment when you purchased it?

A. The boilers, before we purchased them, we went to the Hartford Steam Boiler Insurance Company and they told us if we bought those boilers

they would give us a rating, a pressure of 200 pounds per square inch; the boilers were good enough to stand that pressure and they would insure them at that rate. The engine, before we bought that, the first thing I did, I went to the Curtis Publishing Company in Philadelphia; they have four of those engines in operation there, in operation there yet, and I talked with Mr. Collins, the engineer, and he said they were giving perfect satisfaction, they were economical, and he said if we could get a Rice & Sargent cross compound engine at that time and get prompt delivery we better buy it. I went down and looked at the engine where it was located, everything seemed to be in fairly good condition and we bought the engine.

Q. Did you consider the advisability of buying new equipment at that time?

A. You could not buy it and get any kind of delivery at all.

Q. Did you consider the advisability of equipping with turbine engines?

A. Yes, we wanted to equip with turbine engines, we could not get them.

Q. What do you mean by that, deliveries?

A. Deliveries were so slow we could not make the purchase.

Q. Since the steam plant has been in operation have you had any break-downs?

A. Yes, sir.

Q. How many?

A. Well, we have had one genuine break-down. The second time was an echo of the original break-down.

Q. When was the original break-down?

A. I cannot tell you the exact date, but it was along in January or February a year ago.

Q. What was the cause of the break?

A. The human element entered into that break-

down. It would have happened if it had been a new engine or any kind of engine.

Q. What was it?

A. The condenser is equipped with a float, that when it becomes choked with water opens the vacuum and relieves it so it will not pump back into the cylinders of the engine. This float had become worn or punctured in some manner so it was filled with water and would not raise when the water raised in the condensers, and did not overcome the vacuum and the water pumped back and forth with the reciprocating motion of the engine, pumped the water back into the low pressure cylinder, and of course something had to give; the water would not give, the engine had to and the engine broke in two.

Q. How long was the engine out of commission at that time?

A. A couple of months. I do not remember exactly. Around two months, such a matter.

Q. I understand in December of last year the engine was out of commission; what was the cause of that?

A. Yes. The disc on the low pressure side developed a crack, but there was no question in my mind but what that crack was occasioned when the engine broke the first time, because on examining the disc when it came apart, you would see some bright places where it had just broken and other places where they were dark, black, which showed they had been cracked there quite some time.

Q. Is the engine in condition now?

A. No. It will probably be a month before the engine is in use again. We are not only repairing that broken disc, but Mr. Dunbar, the expert engineer for the Providence Engineering Corporation, we had him come out there and go over the engine and he told us that the high pressure and low pressure valves were both leaking steam and that the valve

seats should be bored out and new valves put in those points. He said they were leaking enough steam to develop about 90 kilowatts of current. So we are doing that overhauling now at the same time we are fixing the disc.

Q. Are you doing anything else with reference to repairing the equipment and putting it in first class shape?

A. Yes. The engineer of the Dey & Zimmermann people said that if we would put a small exciter on the shaft of the engine, run it from the shaft by a belt, that we would save a good deal of power, as the motor driven exciter was considerably too large for the engine. We knew it was too large for the engine, because when we bought it we bought it to supply two engines, expecting we would eventually either put in a turbine or another engine with it. We have not done it yet, so we are now putting in a small exciter that will only give enough excitation for the 500 kilowatt generator that is there and being used now.

Q. While you are making repairs to the plant at the present time are you doing anything else to cause an economy in operation?

A. Yes, instead of using the large pumps that were put in to feed the boilers, which were originally intended to feed four boilers instead of two, we are in negotiation for a small pump that will only be large enough to feed the two boilers. That will be some economy. We also discovered that the bridge wall in one of the boilers had been torn out or burned out and we are replacing that with a new bridge wall. The bridge wall on these Babcock & Wilcox boilers comes up on one side and down on the back end, so the flame will go up and down like that (illustrating) before it goes to the chimney and heats the tubes. That is where they get the economy in the Babcock & Wilcox boilers.

Q. Do you recall anything else that is being done to result in economy of operation?

A. No, that is the principal thing that is being done.

Q. What is your opinion with respect to the efficiency of the boilers after these various repairs are made, the boilers and engine?

A. The engineer for the Providence Engineering Company says that the engine will be just as efficient as a new engine, and good for ten years yet. Well, they say from 13 to 20 pounds of steam to the kilowatt hour. I am not saying that, I do not know. The boilers will be as efficient as any new Babcock & Wilcox boilers would be, because they are just as good as new, were when they were installed, will probably get 10 or 11 pounds of steam to a pound of coal used.

Q. When do you expect to have the steam plant in operation?

A. About the first of March, a little before that, probably the last of February.

Q. From where are you getting current now to supply?

A. Buy it from the Millville Manufacturing Company.

Q. In addition to that generated by the hydro plant.

A. Yes, sir, in addition to that generated by the hydro plant.

Q. I wish you would explain to the Commissioner the reason why the High Pressure Company was organized for the purpose of doing the construction work of the Gas Company, the Electric Light Company and the Water Company.

A. Well, originally the Gas Company consisted of ten or eleven small companies, one company in Millville, the Millville Gas Light Company, and then subsidiary companies in Maurice River Township,

Commercial Township, Vineland, Buena Vista, Landis Township, and three or four other townships, and the question arose how those companies were going to do their construction work. We wanted to do the digging of the mains, the digging of the ditches for the mains with a digging machine. Each one of these companies could not afford to buy a machine and they considered it against the law for the Millville Gas Light Company to go to work and do this work for the others.

Q. That was before the merger occurred, was it not?

A. That was before the merger occurred. Mr. Miller was our attorney at that time and he thought up the plan of forming this High Pressure Construction and Supply Company to do this work for the subsidiary companies, and Mr. Wood considered it was a good plan and backed it up, carried it through.

Q. After the High Pressure Company was organized, what did it do with respect to the Electric Light Company and the other two corporations?

A. It did all the construction work for the Electric Light Company, for the Water Company and for the Gas Company.

Q. On what basis did it do the work?

A. Well, the Gas Company had a contract at first, and mains, services and meters and so on, were based on unit prices, the Water Company, the mains and services were based on unit prices. But there was no way to base machinery for any of the companies on a unit price, so the agreement was that the High Pressure Company should do the work and charge some certain percentage of profit for the work of each company.

Q. Was the electric station of the Electric Light Company constructed on that basis by the High Pressure Construction Company?

A. Yes, sir, it was.

Q. Who furnished the money to finance the construction work?

A. Walter Wood.

Q. To the High Pressure Company?

A. Yes, sir.

Q. What has been the practice with reference to the division of expenses of operation between the four companies, that is, the High Pressure Company, the Water Company, the Electric Light Company and the Gas Company?

A. Well, you mean office expenses or labor expenses?

Q. Labor expenses and office expenses.

A. The labor expenses, every man had to turn in a time card every day and if he worked three hours for one company, he put it down, so many hours for that company, and what he was doing and another company, the same manner. In the office, some salaries were not divided because they spent all their time for the Gas Company or for the Water Company or for the Electric Light Company. In some instances the men and girls spent part of their time for one company or another and that was divided by myself according to the amount of time that was spent by each man on a certain company's affairs.

Q. The office expense, I mean the executive officers, general expenses of that character, how was that divided?

A. My pay was divided between the three utility companies. Other people's pay was divided between the four companies.

Q. In the testimony of Professor Temple there has been some suggestion with reference to the amortization which has been charged against the Electric Light Company property. Do you recall what that has been in the past?

A. I think that the amortization up to a couple of years ago was 10 per cent. that was charged up,

with repairs taken out of it, but since that time I believe it has been 7 1-2 per cent.

Q. Were the repairs deducted?

A. Repairs were deducted, yes.

Q. What is your opinion in respect to the reasonableness of that charge at the present time, 7 1-2 per cent.?

A. I think that 7 1-2 per cent. is low.

Q. Why?

A. I do not think that 10 per cent. was any too high, because I have been there in Millville twenty years, a little over twenty years, and in that time the electric machinery, some of it has been changed three times, none of it less than that and some of it four times.

Q. Which part of the electric equipment do you refer to?

A. The electric generating machinery.

Q. Then your belief is that 7 1-2 per cent. less repairs is not an excessive amortization to be charged against the Electric Light Company account?

A. No, I do not think it is, and when you take into consideration the street lights, there aren't any poles in Millville that last ten years, lots of them go out in six years, you have to replace them at six years, seven years or eight years or nine years, not any that last over ten years; I do not think there are any last that long.

Q. Did the company make application a few years ago to this Commission for the purpose of issuing additional bonds?

A. I think it was three hundred thousand dollars or three hundred and fifty thousand dollars of bonds.

Q. If those bonds had been issued what purpose were the proceeds to be used for?

A. They were to have been used for paying our indebtedness and putting in new machinery, more

electric light machinery.

Mr. Starr: In order that that record may be part of this record, I offer the proceedings in that case.

Mr. Miller: What part of it?

Mr. Starr: The whole proceeding.

Mr. Miller: You just want to show you made an application?

Mr. Starr: We tried to get money to pay our indebtedness.

Mr. Miller: And it was refused. Well, that can be testified to.

Mr. Starr: And the ground on which it was refused.

Commissioner Osborne: We will admit the record. You do not have to print any more than is pertinent. The mere fact it is admitted in evidence don't make this record any more voluminous than it is.

Mr. Starr: Only it may be referred to by the Commission and counsel.

Commissioner Osborne: It is a matter of record. You want to be able to use it, if you choose.

Q. What is the stock outstanding of the Electric Light Company?

A. Fifty thousand dollars.

Q. How is that held generally?

A. Mr. Walter Wood owns about 66 per cent. of it and Mr. George Wood owns with the Millville Manufacturing Company, which he controls, of course, owns the balance.

Q. Has there been any effort made to increase

the capitalization of that corporation?

A. Yes, sir.

Q. With what success?

A. We called a meeting of the stockholders for the purpose of voting on an increase of capitalization of the company. Mr. George Wood nor none of his representatives attended the meeting, refused to attend.

Q. You did not have the necessary two-thirds.

A. We did not have the necessary two-thirds.

Q. To increase the capital.

A. To increase the capital stock.

Q. In your judgment is it possible to have that stock increased at the present time?

A. Not as long as George Wood lives.

Q. Are George and Walter brothers?

A. Yes, sir, they are brothers.

(Discussion off the record.)

Q. Have you had any figures made or supervised the making of any figures to show the relative cost of current produced during the month of November at the steam plant and that which you purchased from the Millville Manufacturing Company?

A. Yes, sir, I had Mr. Buell, my Electric Light Superintendent, take some figures from his daily log sheet and compile them for me and I looked them over to see if they were all right.

Q. Are they correct in your judgment?

A. They are. They are correct according to the log sheets.

Mr. Starr: I offer that in evidence, if your Honor please.

(Statement of comparison of cost of current as purchased and produced for month of November, 1922, received and marked

Exhibit R-4.)

Q. Have you also had some figures made for the month of December last, showing the relative cost?

A. Yes, sir. In December we bought our current from the Millville Manufacturing Company. In November we made it ourselves.

Q. The steam plant, as I understand it, was shut down in the month of December.

A. In the month of December, yes, sir.

Mr. Starr: I offer that in evidence, showing the cost on the switchboard of the current purchased from the Millville Manufacturing Company during December.

(Statement of cost at switchboard of current purchased from Millville Manufacturing Company for December, 1922, received and marked Exhibit R-5.)

Q. Mr. Franklin, just explain in a general way, without going into detail, what those two calculations show, R-4 and R-5.

A. Taking November first, the total current generated was 164,700 kilowatts of which 30,346 was used by the auxiliary apparatus in the works. This shows then the cost of the coal, of the labor in the boiler house and the cost of steam for the pumps, engineers in the engine house, the oil, the fixed charges on the boiler room and the fixed charges on the engine room.

Q. What is the net result of the current produced in the steam plant?

A. The current placed on our switchboard by our own works is .0319, I guess it is.

Q. .0389 it is.

A. .0389. If we had bought the same amount of current from the Millville Manufacturing Company for the same month, including the overhead in the

engine house and the boiler house which has to be included anyhow because it is there, it is interest and amortization, it would have cost .04558.

Q. What with reference to the month of December?

A. In the month of December, of course, we bought all of our current from the Millville Manufacturing Company. On their switchboard it was 135,700 kilowatts and on our switchboard it was a loss of 10,300 kilowatts.

Q. How do you account for that loss?

A. Step up and step down transformers and some trifling loss on the line between the two works. We paid for current to them $4083.50 which would be at the rate of .032563 per kilowatt and adding the overhead for the boiler room and engine room, which cannot be avoided, which is .012345, it makes the total cost on our switchboard .045576 per kilowatt.

Q. There has been some suggestion that the requirements of the company, so far as current is concerned, could be taken from the Millville Manufacturing Company in the future. What have you to say with reference to that suggestion?

A. Well, it is very questionable. It could not be done under a contract without George Wood's consent. I understand Mr. Walter Wood has asked young Richard Wood three or four times—

Q. Who is Richard?

A. Richard, he is George Wood's son, he has practical charge of the bleachery, but he never has been able to get him to name a price or how long they would furnish it for. There are a lot of other things that enter into this that would have to be smoothed out before any agreements could be made. For instance, the Water Company owns four or five acres of land down on the flats where the pump house is located, which the Millville Manufacturing

Company is very desirous of owning. It was bought by Walter Wood some twenty-three or four years ago for the purpose of sinking artesian wells to partly furnish water for the Millville Water Company, and there are 17 or 18 wells on that piece of property and we do take water and mix it with the lake water from 8 or 9 of them. At the time it was bought it was bought at auction. George Wood stood there and ran the price up on Walter Wood, from what it was really worth to probably four or five times what it was worth. Now they want that piece of property and they want to take that into consideration if they make any agreement with us on current.

Q. From your knowledge of the situation is it your belief it would be feasible and practical at all to abandon the steam plant and depend entirely on getting current from the Millville Manufacturing Company?

A. I do not think it would be. In the first place, the Millville Manufacturing Company does not give us as steady a supply as we get from our own plant, that is, the voltage fluctuates, and they generate at 600 volts and step it up to 2300 for us, and that is the reason why they cannot get a steady voltage. When their load is on in the daytime, their own load in the bleachery, the voltage is not as good as it is at night time when they take their load off and take off their trolley line. They supply the trolley line from the same generator. So I do not believe under the conditions that it is practical to buy current from them, because we have our own overheads, the electric light plant is built there and the machinery is there, we have to pay interest on it, we have to pay taxes on it, and when you add that in I do not see how they can sell us current as cheap as we can make it ourselves.

I will tell you the trouble with the Millville Electric Light Company is not because they cannot

make current cheap; it is because they do not sell enough of it. In December we only sold 126,000 kilowatts of current. A town of four or five thousand population would and should take that much current, let alone a town of fifteen thousand population. We haven't got the customers, we haven't got any power customers. Our engine is running twenty-two hours out of the twenty-four with just a little bit of a load on it, a couple hundred kilowatts, something like that. If we could have a load in the day time that would be five hundred kilowatts, the engine would be efficient. The same thing applies to a turbo generator that applies to a reciprocating engine in that respect; if there is no load on it, it is not going to be efficient. Dan Lewis, the Manager of the Millville Manufacturing Company, told me the other day, when we were talking about buying current from them, and the unsatisfactory results we were getting, he said, our turbo generator, when it has just got a small load on, like supplying you from 6:00 o'clock until morning, takes 30 pounds of steam to the kilowatt to make it.

Q. Is that large or small?

A. If it was operated at full capacity and efficiently it had not ought to take more than 17 or 18 pounds; that is what the guarantee of the General Electric Company is at a full load. So we have got to have the customers, we have got to have the sale for our current; that is what we need, what we have got to have if we are going to make our plant a paying institution.

Q. (By Commissioner Osborne.) Why can't you get it; isn't it there, aren't the manufacturers there?

A. No, sir, the manufacturers are not there.

Q. It is not a manufacturing community?

A. The Millville Manufacturing Company has got their own plant, Whitall Tatem Company has

got their own plant. What is required by the Millville Bottle Works, we furnish them, but they do not amount to very much, they do not amount to more than fifty or sixty dollars a month; T. C. Wheaton, that is the glass works, that was our biggest customer during the war time, their bills used to run four or five thousand dollars a month and they run now from five to seven hundred dollars a month. Taubel built a large knitting factory there.

Q. Knitting?

A. Yes, knitting factory, knitting stockings. We equipped with transformers and ran a line and everything for them and they stayed a couple of years and the girls went on strike and they have gone out of business there and moved their plant away and I do not suppose they will ever come back. We have fifteen or twenty customers from one, two or three horse power apiece, but that don't amount to anything. You see, that is no load at all. We have got about eleven hundred lighting customers now. A year ago we did not have over eight hundred. We are putting them on probably at the rate of 25 or 30 a month, lighting customers. Of course that is a short load, that is only an hour or two at the peak of the evening.

Q. Do you do the municipal lighting?

A. Yes, sir, we do the municipal lighting. We have something over five hundred street lamps, incandescent street lamps on the streets. That is done by water power.

Q. Water company?

A. Water power. The hydro station.

Q. (By Mr. Starr.) So far as power current is concerned, do you believe that there is any probability of any increase in the amount of consumption in the near future?

A. I expect in the next five to eight years there will be some increase. It is coming along slowly, a

five horse power motor here and there, but it is coming very slow. If it would come fifty horse power in a year I would think it would be wonderful.

Q. When did the power consumption begin to fall off?

A. Right after the armistice.

Q. During the war you had the current and after the armistice it came to an end?

A. We had a good load, but we had the old rate and coal was fifteen and sixteen dollars a ton, so there was no money in it, we were losing money then.

Q. The Commissioner referred to municipal lighting. How long have you had that contract?

A. We have always lit Millville for the last twenty-five or thirty years, I guess; twenty-five years anyhow. But the last contract was made in the fall of 1915 for five years. That expired a couple of years ago and while we have asked the City to renew it, it never has been renewed.

Q. What has been the relation between the municipality and the company with respect to the municipal lighting since the expiration of that contract?

A. Well, we asked them a price that was higher than the original contract, but it was lower than the cities of Bridgeton, Atlantic City or any surrounding towns, even Vineland, which has a municipally owned plant; it was lower than any of those places were, but the City refused to enter into a new contract, thought we were asking them too much money. We are still furnishing them current and they are paying us for it on the basis of the old contract made in 1915.

Q. (By Commissioner Osborne.) What effect has that on the other consumers?

A. Well, we are furnishing the street lighting for less than a cent and a half a kilowatt hour. Mr.

De Huff can tell you exactly, he has the figures.

Q. How much do your other customers pay?

A. Our power averages 5 1-2 cents and our commercial lighting at the higher rate we are charging averages us a little over 13 cents.

Q. So the rest of the community are paying, making up the loss on the street lighting.

A. That is it exactly.

Q. (By Mr. Starr.) What effort have you made to correct that situation and what has been the result of your efforts?

A. We have asked the City several times to enter into a new contract with us. We finally offered to enter into a contract with them that was 12 per cent. above the old contract made in 1915, but they never saw fit to do it, and as I say they are paying on the basis of the old contract.

Q. Do you render bills to them monthly?

A. We render bills to them monthly on the basis of the new price that we asked for and they make a deduction and send us a check for the difference on account.

Q. Arbitrarily make a deduction and send you a check based upon the contract price of 1915, is that right?

A. Yes, sir.

Q. (By Commissioner Osborne.) How long has that been going on?

A. Two years.

Q. How much do they owe you?

A. About four hundred and forty dollars a month.

Mr. Miller: I say nothing. That is what they claim we owe.

Witness: Four hundred and forty dollars a month for two years.

Commissioner Osborne: They owe what

the service is reasonably worth if there is no contract.

Mr. Miller: That is what we say and what we are claiming.

Commissioner Osborne: What it is worth depends somewhat on the relation to what it costs and what other people are paying for it.

Q. (By Mr. Starr.) Just to show the attitude of the City, did they ever return to you your check that you deposited as a matter of good faith when you made the bid in 1920?

A. No, we made a deposit of a two thousand dollar check when we made the bid in 1920, I think it was.

Q. And that has been retained ever since?

A. Is held, yes, by the City.

Q. (By Commissioner Osborne.) I suppose you stopped payment on it, didn't you?

A. No, we have not.

Mr. Starr: It has never been presented.

Q. You let them tie up two thousand dollars of your money?

A. It has not been presented that I know of. I don't think it ever has.

Commissioner Osborne: It may not have been presented, but if I gave someone a check to carry out a bargain which they do not carry out and they do not give me back my check I stop payment on it. I don't let my money stay there.

Witness: We had not stopped payment on the check.

Q. (By Mr. Starr.) Can you tell us about what the company is losing in actual value by furnishing the City at the present time with current under the 1915 contract?

A. Well, we are losing at least, at a low estimate, four thousand dollars a year, I ought to say five.

Q. (By Commissioner Osborne.) Why do you continue to furnish, why don't you cut off the current.

Mr. Starr: He knows what I have advised him.

A. We expect they are going to pay us some time.

Q. You hope there will be a change of heart?

A. I hope so. It would not look well to shut a city like that off in the dark.

Q. It depends on how the City behaves, it seems to me, how it would look.

A. I do not think they have any fault to find with the service furnished them. I think they all acknowledge it is the best there is—not the best, but as good as there is in New Jersey.

Mr. Miller: I would not like to be bound by that statement.

Commissioner Osborne: Of course you are not bound by anything your adversary's witness says.

CROSS-EXAMINATION

By Mr. Miller:

Q. What was the application to the Board for the bond issue, what amount of bonds did you want to issue?

A. Mr. Miller, I cannot say certain now, but I think it was three hundred and fifty thousand dollars.

Q. Wasn't your application for a bond issue of seven hundred and fifty thousand dollars par value of which a present issue of five hundred and thirty

thousand dollars was requested?

A. It might have been. I won't say it was or was not. I cannot remember. The records would tell.

Q. I see it appears by the records of the Board of Public Utility Commissioners of New Jersey, which I hold in my hand. You do not challenge the correctness of this record, do you?

A. No, if the record is there it is correct.

Commissioner Osborne: He does not pretend to say his recollection is accurate. They have there the record. The record will speak for itself.

Q. Mr. Franklin, the reason that your application was rejected was that the proportionate stock issue was too small in proportion to the proposed bond issue, was that it, or don't you know why?

A. Yes, the refusal of the Commission?

Q. Yes.

A. Because the stock issue was too small for the amount of bonds that was requested. I believe they said we could come back if we wished to and apply for two hundred thousand dollars. They would consider it, but the two hundred thousand dollars would not pay our indebtedness. We were also after enough money to put in a duplicate plant. At that time the Millville Manufacturing Company did not have a plant big enough to supply us.

Q. What were you going to do with that money, five hundred and thirty thousand dollars?

A. To pay our present indebtedness at that time and put in some more Babcock & Wilcox boilers and a turbo generator set.

Q. (By Commissioner Osborne.) Was that before you bought this engine?

A. No, it was afterwards.

Q. You wanted to discard this engine, did you?

A. No, we did not want to discard it, but wanted to keep it for an emergency unit.

Q. A standby unit?

A. Yes, sir.

Q. (By Mr. Miller.) Wasn't the application made after you had completed the present plant?

A. It might have been, I won't say, I cannot remember.

Q. August, 1920, wasn't it?

A. The plant was completed in 1920.

Q. Is it true that you at present are unable to increase your capital because of dissension in your company?

A. Between the two brothers, yes, sir. There is no stock owned by anybody but them.

Q. Does your company need this amount, five hundred and thirty thousand dollars to establish the kind of a plant you wish?

A. And pay our indebtedness, yes, sir.

Q. Since you are unable to obtain an approval of the Utility Commission for a sound reason, reason which relates to dissension in your own company, then it must follow that you are not capable of functioning as a utility corporation so that you may supply the public of Millville.

A. We are supplying the public of Millville with all they require.

Q. I mean economically and in the manner they should be supplied.

A. Yes, sir.

Q. How are you going to do it without money?

A. We are in a position, we have machinery enough to do it.

Q. Where do you get your money?

A. Borrow it from Mr. Walter Wood.

Q. What is the largest city in Cumberland County?

A. Millville.

Q. Its growth has surpassed that of Bridgeton?

A. I believe it has.

Q. The town is thriving you would say, wouldn't you?

A. I would say it was, yes, sir.

Q. You have noticed a very important increase in the number of applications for the use of domestic power, that is in private houses, haven't you?

A. Yes, sir.

Q. Wouldn't you say the town in every way is growing, expanding and thriving?

A. I think it is, yes, sir.

Q. Don't you think that because your rates have been so high the use of power has been discouraged by manufacturers?

A. Not up to the present time, I don't think it has.

Q. Would that have some influence on it, a high rate?

A. It would in time, yes, sir.

Q. Do you propose to make additional improvement now by the issuance of more short term notes to the High Pressure Company which are to be discounted by Mr. Wood; isn't that your present scheme of financing contemplated improvements?

A. That is the only method we have at the present time.

Q. I show you a list of promissory notes which have been issued since November 30th, 1916, down to the present time and ask you if that statement contains a correct tabulation of the notes that have been issued?

A. Mr. Miller, I could not say it did or did not, without comparing it, but I think Mr. De Huff can answer that question better than I can.

Q. You do not challenge it, do you; it looks about right, doesn't it?

A. I would not say I could tell.

Q. Since 1916 there have been outstanding promissory notes for a large amount.

A. Oh, yes, sir.

Q. And about how large in amount?

A. I cannot tell you.

Q. Over two hundred thousand dollars?

A. You will have to ask Mr. De Huff.

Q. I am asking you.

A. I cannot tell you.

Q. Wouldn't you say over two hundred thousand dollars?

A. I cannot say yes or no.

Commissioner Osborne: Are these still outstanding at the present time?

Mr. Miller: That is what I want to find out. I think they are.

Mr. Starr: I have a schedule here that I propose to put in.

Mr. Miller: Let us have that now and I will cross-examine on it. I would like to get it in in its order, then we will understand it.

Commissioner Osborne: What is the purpose of it?

Mr. Miller: I want to show, if your Honor please, that this corporation has attempted to circumvent the law by issuing not temporary short term notes, but actually long term papers, substantially bond issues on which they calculate a charge against the people of Millville, interest, and which bonds or obligations have not been approved by this Commission. If they can do it you might as well wipe your utility law off the statute books as far as capitalization is concerned. Anybody can see that.

Commissioner Osborne: Perhaps they will

admit, if you will eliminate the statement that it is for the purpose of circumventing the law, perhaps they will admit that they have outstanding a certain amount of notes.

Mr. Starr: I propose to put a schedule in evidence.

Mr. Miller: Here is the whole thing, is that right?

Mr. Starr: I don't know.

Mr. Miller: Ask Mr. De Huff then.

Commissioner Osborne: You gentlemen do not seem to be disputing about anything except over whether you will admit what is true or not. If they are willing to put it in and you are willing to have it put in, during the recess you can compare notes and we will have it put in.

Mr. Miller: I ask Mr. De Huff whether he knows.

Mr. Starr: I did not say he knows.

Mr. Miller: Franklin said he knew.

Commissioner Osborne: What I understand from the witness is that they had to pursue this course because of the inability to increase the stock issue.

Mr. Starr: Either that or have no plant.

Mr. Miller: That is all right, but you come finally to the law on such a situation. If you can do it, I should say the law in New Jersey—

Commissioner Osborne: That is not the real issue here, I imagine.

Mr. Miller: Well, it might be.

Commissioner Osborne: If they are utiliz-

ing this method to give your municipality service that they could not otherwise give you, why should you quarrel with it? Is that the issue we are trying here? Are we here just to be captious, or are we here to find out what the real trouble is and find a remedy for it?

Mr. Miller: If your honor please, Millville has a project developed so far, in an ordinance, providing for the erection of a municipal plant for the supply of light for street lighting purposes, and I may say they have undertaken municipal ownership. I do not want to be a prophet, but I think that is in the mind of the public down there. Now the present question is, would that drive these people out of business? I would not myself, I don't care anything about it.

Commissioner Osborne: That don't make any difference, whether you would drive them out of business or not.

Mr. Miller: What I ask your Honor to rule on would be this legal point; can they, in calculating their charges, the proper charges for production of power, include the interest on this sum, sixteen or eighteen thousand dollars a year on these funds?

Commissioner Osborne: Don't you get the benefit of that money in generating that power and furnishing that power?

Mr. Miller: Well, I should say so, if you ask me.

Commissioner Osborne: Why shouldn't you pay for it? Let us look at the equity of the thing. If the municipality gets the benefit of this money invested for the municipality's bene-

fit, why shouldn't it pay interest on it? If it was in the form of capital it would be called upon to pay a fair return and a fair return would probably be larger than bare interest.

Mr. Miller: If your Honor please, asking me—

Commissioner Osborne: I am asking you.

Mr. Miller: Louis Miller, personally, I think that is an all right method of financing. But I, of course, represent constituents who might think the law would prevent that sort of thing.

Commissioner Osborne: That is another question what the law prevents or does not prevent.

Mr. Miller: I am perfectly satisfied to go back to the old scheme without supervising issues myself.

Commissioner Osborne: The question is whether the municipality wants to come here and take the position it does not want to pay for what it gets.

Mr. Miller: I think it will take the position this was to circumvent the law and they could not legally expect the interest on those notes. But I would not quarrel with your Honor if you ruled directly otherwise.

Commissioner Osborne: You can raise that question as a legal question.

Mr. Miller: I have not shown the facts yet. That is all I wanted to do.

Commissioner Osborne: I think we have probably reached a very opportune moment to have recess. In the meantime you gentlemen get together on that list of securities, which

there ought not to be any time wasted on.

Mr. Miller: If you rule otherwise I shall not cry about it, because I see the underlying equity, of course.

RECESS FROM ONE TO TWO O'CLOCK

AFTER RECESS

Commissioner Osborne: Did you gentlemen agree upon the outstanding notes?

Mr. Starr: Unfortunately, we have no record here of the individual transactions.

Commissioner Osborne: Well, it is just a matter of books; it will all be shown on the books.

Mr. Starr: Yes, it will appear on the books. If Mr. Miller wants us to we will take this and check it up. Otherwise we have given him a recapitulation showing the entire amount outstanding.

Commissioner Osborne: Does the total correspond with that?

Mr. Starr: No, because this does not pretend to be complete.

Mr. Miller: Wouldn't it be better to have Mr. DeHuff make a statement so we will have it? It comes up in every case we have.

Commissioner Osborne: We want the total. What do I care whether one note is for one thousand dollars or two thousand dollars? All I want to know is whether there are three thousand dollars out. What difference does it make what every note is? If the principle is wrong, it is just as wrong if there are ten notes or if there are one hundred notes.

Mr. Miller: I think you are right about that.

Commissioner Osborne: So it is the total; they have outstanding notes which they put out to meet the situation, amounting to so and so much. As far as deciding the principle is concerned, it don't matter whether it is one hundred and fifty thousand dollars or one hundred and sixty thousand dollars; that is a matter of bookkeeping.

Mr. Miller: Couldn't we agree that the notes were issued as shown in this statement, and the date?

Mr. Starr: We cannot agree at all. It is probably correct, but we cannot agree until we check it.

Commissioner Osborne: The books have the record of the notes. You furnish counsel with a statement, a detailed statement of the notes.

Mr. Starr: We will do that. This was prepared in accordance with your suggestion at one of the former hearings.

Commissioner Osborne: If it gives the total of the notes outstanding it may meet the situation.

Mr. Starr: It gives the total of the notes outstanding as of the first of January, 1922.

Commissioner Osborne: It has one hundred and thirty-seven notes for construction, one hundred and ninety-seven thousand dollars. What more do you want than that; what will you do with it after you get it, Mr. Miller?

Mr. Miller: Judge, I think myself that statement is pretty good.

Commissioner Osborne: Then we will take

this statement subject to correction for errors.

Mr. Miller: I think Professor Temple thinks it is better to have it detailed. I think we have the result there.

Commissioner Osborne: I will permit Professor Temple to state what advantage there will be in having a long itemized statement of the notes.

Mr. Temple: It is the advantage of showing how they parallel some of these expensive constructions for old equipment, and help to tally how those things kept along in point of time.

Commissioner Osborne: They say they borrowed the money to do that, to buy this equipment; there is no denial of that?

Mr. Temple: Another point, your Honor, was it would show to whom those notes were drawn. As I understand it, they were drawn to one of the officers of this company and if offered as bonds, under color you might say of funded debts, some of them are actually for interest on funded debts.

Mr. Starr: There is no pretense of that. We show the notes given for interest.

Mr. Temple: I have not seen that statement.

Commissioner Osborne: Submit a copy of that statement and see whether that meets your idea of what you ought to have.

If it becomes necessary to have the detail of these notes we can get it at any time.

Mr. Starr: It seems this statement was made up the 1st of January, 1922, we will furnish a

detailed statement of the notes given this year, 1922.

Commissioner Osborne: I do not think they will deny they borrowed this money, borrowed it on notes for the reason which they stated, to-wit, they could not get approval of bonds because they could not issue more stock, and that they used this money to buy the equipment with; it was the only place they could get it.

Mr. Temple: There is one thing that does not bring out and that is this; that these notes bear dates as early as way back in 1916, the application for funding this debt to the Commissioner, for the issuance of bonds, was not made until long after the plant was started, and many years, four years anyhow, after the construction was done.

Commissioner Osborne: I suppose the company needed the money and did not have it and they borrowed it and gave these notes; I suppose they will admit that.

Mr. Temple: The Commission's rules are if extensions are made to plant, involving the expenditure of money which has to be funded, that application for the issuance of those securities is ordinarily made before the money is started to be expended and then if not allowed, of course, the actual proper result can be had, but if it has already been spent there is no use of not allowing it.

Commissioner Osborne: That is not our rule at all. We frequently refuse to allow a company credit for money that it has spent.

Mr. Starr: You did in this case.

Commissioner Osborne: If it had spent it improvidently. We are not tied up with that. We are not deciding, when we are passing upon the exact form in which this evidence shall go in and the extent to which the details shall be furnished, we are not passing on the broad question of whether the practice is proper or whether they shall be allowed for it. I am not passing on that by admitting this piece of paper.

Mr. Miller: I should think your Honor would want to consider that very carefully.

Mr. Temple: One important feature of these notes is that there has been something around seventy or eighty thousand dollars interest paid on them, much of that before the plant in realization was in hand at all from those expenditures, because the expense of many years is involved in that plant, about four years, and all that time interest on these notes was running and that has been deducted in earnings.

Commissioner Osborne: They have offered to furnish a detailed statement of these notes. We cannot, of course, stop now to get it.

Mr. Temple: I understood you thought that would be satisfactory.

Commissioner Osborne: I asked him if he could show any reason why he wanted the other. If we find we need it we will call for it and both sides consent it go in and be made evidential.

Mr. Starr: Yes.

Mr. Miller: Yes.

S. J. Franklin resumes the stand on behalf of Millville Electric Light Company.

CROSS-EXAMINATION

By Mr. Miller, continued:

Q. Mr. Franklin, just to establish the fact, what was the money used for which you realized from the issue of these notes?

A. The construction of the plant and of the lines, interest on money borrowed.

Q. Practically you paid for the entire plant, didn't you by the issue of these notes?

A. We don't owe anybody but Walter Wood.

Q. Did you include a profit to the Construction Company when you issued these notes?

A. Certainly we did.

Q. And you included the profit which is shown by Mr. Carver's statement?

A. No, sir, by Mr. De Huff's statement.

Commissioner Osborne: By that, do you mean at the time they issued these notes, did they with the proceed of these notes pay a profit on the work it had done; is that what you mean? I am not quite sure I understand the purport of your question.

Mr. Miller: You have the idea. These notes were issued to the High Pressure Company, the Construction Company.

Commissioner Osborne: I thought you said they were all issued to Mr. Wood.

Mr. Starr: No, turned over to Mr. Wood; he advanced the money.

Mr. Miller: I better show that by a question. I will withdraw that question and ask Mr. Franklin this: These notes were originally issued to the High Pressure Construction Company, weren't they?

Witness: Some of them were and turned

over, The High Pressure Construction Company to Mr. Wood.

Q. And discounted and turned over by the Construction Company to him?

A. They were not discounted, however, they were turned over at face value.

Q. And all the notes you issued to the High Pressure Company represented what?

A. Payment for construction work.

Q. Did that include the profit testified to by Mr. Carver?

A. I won't say whether it did or not.

Q. It included a profit?

A. It did include a profit as testified to by Mr. De Huff.

Q. So that what you practically did by this method of financing was to construct an electric light plant on the theory you were issuing short term notes.

A. That is the only way we had to get the money, was issuing short term notes.

Q. (By Commissioner Osborne.) And keep renewing them.

A. Renewing, yes, keep renewing them. I don't know whether some of them are on demand or not; I cannot tell that; the books will show that.

Q. They are all short term notes?

A. Yes, sir.

Q. (By Mr. Miller.) What are they, demand notes?

A. Some demand and some four months.

Mr. Miller: I think that shows the situation.

Q. Some of the notes, forty or fifty thousand dollars of them are for accumulated interest, is that right?

Commissioner Osborne: How do you say

the City is prejudiced by this proceeding?

Mr. Miller: If your Honor should hold that the financing was unlawful, then of course, your Honor would not allow them any credit, I suppose, for the interest on those obligations.

Commissioner Osborne: I am not so sure, if you got the benefit of it.

Mr. Miller: I don't say how your Honor will rule. I think it is quite an important point, but one you may want to overlook in this particular rate case.

Commissioner Osborne: I might want to overlook the fact that it was a short term note which was carried an undue length of time and say, it was necessary under exigencies of the case in order to give you the service that you are clamoring for and were entitled to have. What aspect of this has been prejudicial to you, that is to say, how has the municipality, regardless of whether the company ran its business lawfully or unlawfully, which is beside the question so far as furnishing light to your municipality is concerned—assuming you got the light and paid something for it, how were you prejudiced by this unlawful proceeding? I rather imagine that the only relief you could get would be measured by the extent of your prejudice as brought about by the illegality.

Mr. Miller: The only prejudice would be the interest charge which you would allow.

Commissioner Osborne: The interest charge on these notes?

Mr. Miller: You asked me personally what I thought. I think it is all right to allow the interest charge but of course your Honor sits

in a different capacity.

Commissioner Osborne: With these facts brought to our attention, the fact that we might take steps to correct this illegality would not necessarily affect your relation to this company and the fact that you ought to pay—by you, I mean the municipality, ought to pay and the people ought to pay an adequate and proper sum for the service they are getting.

Mr. Miller: Well, I confess from the City's standpoint we get the benefit of the expenditure of whatever money is honestly spent.

Mr. Starr: That is as long as it is broad, if you allow a rate of return.

Mr. Miller: We are in a rate case. We are bound by the principles. Your Honor must determine whether this eighteen or twenty thousand dollars of charges are fixed charges properly to be allowed. I shall not quarrel. I think according to my old-fashioned notion it ought to be.

Commissioner Osborne: It might not be proper, but if you got the benefit of them I would hesitate to hold they should not be allowed, as far as you are concerned.

Mr. Miller: I think the only person to be troubled would be Judge Osborne.

Commissioner Osborne: It will not trouble me any; I will simply apply the ordinary equitable principles and common sense to it.

Mr. Miller: That means in such cases your Honor would allow such an interest charge on these notes, even though irregularly issued.

Commissioner Osborne: As might have

been there had they been regularly issued.

Mr. Miller: I shall not quarrel with it. I merely raise the point so we can have it determined.

Q. Now, Mr. Franklin, in the steam plant you had boilers which supplied steam to the Gas Company, didn't you? You have them now?

A. Yes, but they are not supplying steam to the Gas Company now.

Q. You did until a recent date, didn't you?

A. Yes, at different times.

Q. Up to what date?

A. Up to the first of December. There was a time in the last year that we did not supply them for a month or two.

Q. Did the Electric Light Company charge the Gas Company for the steam?

A. Yes, sir.

Q. Who made the charge, the bookkeeper?

A. Mr. Buell figured it out from his log sheets first and handed it over to the bookkeeper.

Q. Who determined what the charge should be?

A. According to the price of coal and the price of labor, how many pounds of steam were used by the Gas Company and how many were used by the Electric Light Company.

Q. How did you keep track of the steam supplied?

A. Had a meter.

Q. What is Mr. Buell's position?

A. He is Superintendent for the Electric Light Company.

Q. Did he charge the Gas Company whatever he pleased?

A. No, sir. I told you he charged according to the price of coal, the price of labor and figured the price of steam on that basis.

Q. He talked with you, did he, before he made the charge?

A. He talked with me every day.

Q. You represented the Gas Company in the conference, didn't you?

A. I am Manager of both companies.

Q. Did the Gas Company sell a refuse of coke, coke dust—what do you call that stuff—coke breeze to the Electric Light Company?

A. Yes, sir.

Q. What is that good for?

A. Make heat.

Q. A kind of coke dust, isn't it?

A. No, it is not dust.

Q. Isn't it a most inefficient fuel for the production of heat?

A. No, I think you would be tickled to death if you could get some of it right now for your house.

Q. What did you use the coke for? You used the coke up there in your water gas plant.

A. We used that in the generator sets in the water gas plant.

Q. This dust is sold to the Electric Light Company.

A. It is not dust.

Q. How much did you charge them for it?

A. Five dollars a ton.

Q. It ran up to twenty-five or thirty thousand dollars.

A. No, sir.

Q. Twenty-eight thousand dollars.

A. No, sir.

Q. How much?

A. I don't know. Mr. De Huff can tell you that.

Q. Have you got an application on file for the issuance of securities for the Gas Company?

A. We have made an application, yes, sir.

Q. When did you make it?

A. Two or three months ago; no date has been set for the hearing yet.

Q. In that application it is to the interest of the Gas Company to make a favorable financial showing, isn't it?

A. No, sir.

Q. In applying for a bond issue isn't it the custom to do some more or less window dressing?

A. Nothing more than the actual books show.

Q. You have a rate case pending for the Electric Light Company, haven' you?

A. Yes, sir.

Q. So it would be advantageous to the Gas Company to be charged a small price for the steam, wouldn't it?

A. No, sir.

Q. It would be advantageous to the Electric Light Company if it were allowed a small price?

A. No, sir.

Q. So that its profit might be minimized, isn't that so?

A. No, sir. Nothing of the kind is intended. The steam was sold by the Electric Light Company to the Gas Company so it could run the boilers at their capacity, get 100 per cent. efficiency, if possible, and help reduce the overhead charge of the Millville Electric Light Company on the boiler house.

Q. So it is a profitable thing to the Electric Light Company to sell this steam?

A. We added about 16 cents a thousand pounds to cost.

Q. (By Commissioner Osborne.) You added what?

A. Added to the actual cost of the steam about 16 cents per thousand pounds.

Q. Cost to whom?

A. Cost to the Electric Light Company.

Q. Then it was not profitable?

A. What was that?

Q. He asked if it was a profitable thing for the light company?

A. It was a small profit for the Electric Light Company, certainly.

Q. You mean you got 16 cents more a thousand for it.

A. Than it actually cost the Electric Light Company.

Q. By doing this, by this arrangement.

A. By selling the Gas Company the steam.

Q. You made a profit of 16 cents a thousand, is that it?

A. Pounds, yes.

Q. (By Mr. Miller.) You think it was profitable to sell this steam, do you, to the Gas Company?

A. It helps reduce the overhead charge of the Millville Electric Light Company's plant; it added just that much.

Q. But if it was selling steam at a loss it would not be reducing the overhead charge, would it?

A. It was not selling steam at a loss.

Q. You said that Buell made up his rate from the—how did he make it up?

A. From the log sheets of the Electric Light Company.

Q. How did he measure the steam?

A. By a Republic flow meter.

Q. Was the meter correct or not correct?

A. I cannot tell you. When we bought it, it was guaranteed to be correct within 2 per cent.

Q. Have you made some readjustment of the cost now being charged against the Gas Company, since your engineers found that—

A. No, sir.

Q. He advised you to do it, didn't he?

A. No, sir, he said he thought the flow meter was wrong.

Q. You don't know anything about it yourself, do you, so you are not challenging that.

A. Yes, sir. I am challenging that because I think the manufacturers of the meter know more about it than somebody outside.

Q. You don't think it would be to the advantage of the Gas Company to have an undercharge at this particular time, and has been to its advantage during the past year, in view of the application for the issue of bonds, do you?

A. No, sir, I do not.

Q. You do not think that factor would help you in a rate case?

A. Not the least bit in the world.

Q. If the Electric Light Company was being robbed, so to speak.

A. No, sir, I do not think it would help us at all.

Q. Does the Water Company use electricity?

A. Yes, sir.

Q. How is the amount charged against the Water Company ascertained; by a meter?

A. It is now. It was originally estimated from the efficiency of the motors that were operated.

Q. Up to what time was it so?

A. Some time the first of November, I guess.

Q. So during all the time preceding, the charge made against the Water Company was a mere estimation made by somebody, was it?

A. Yes, sir.

Q. Who was the person who made the estimate?

A. Mr. Buell.

Q. You have measured it since November 1st, have you?

A. What is that?

Q. You have measured the current since November 1st?

A. We have meters on it now.

Q. Do you know anything about the result of

the metering, whether you have to reduce your charge?

A. Less than what it was when we were estimating.

Q. How much?

A. I cannot tell you exactly.

Q. Who can say?

A. I don't know that anybody can except by referring to the books and seeing what the charges were.

Q. Did you charge a certain rate before November 1st, per kilowatt hour, for the current supplied the Water Company?

A. 5 1-2 cents an hour, a kilowatt.

Q. You charge the same rate now?

A. Yes, sir.

Q. When you measure the kilowatt hours you find that there are less than you have been estimating?

A. They have been, yes, the last two months.

Q. How many months reading have you had?

A. With the meters, about two months.

Q. Will you furnish a statement of the readings since November 1st?

A. Yes.

Q. And a statement of the estimations of the kilowatt hours, that you made?

A. I think you already have that, but we will furnish it to you again.

Mr. Miller: Made for the last three years, the charges you made against the Water Company, the kilowatt hours supplied the Water Company, I mean by that the number of kilowatt hours and how much you charged.

Q. Can you furnish the number of gallons of water pumped?

A. No,sir, that is just an estimation, that would be just an estimation, an estimate.

Q. You cannot tell the Commission then how many gallons of water were pumped from time to time in the last three years, can you?

A. Only an estimate, that is all we have got of it on our books, an estimate.

Q. You are still estimating the number of gallons pumped?

A. Yes, we furnish it each month to the State Board of Health.

Q. Have you got a flow meter on your pump?

A. No. We have a flow meter on our main, but we are not using it.

Q. That shows how much water goes out?

A. No, it only shows part, the main goes two ways and this is on only one main.

Q. You have not got a record then which would permit this Commission to test whether the gallons of water you are pumping with so many kilowatt hours of current must have been actually used, have you?

A. Only an estimate, but that estimate is made by running a reciprocating pump for an hour or two hours or three hours at a time, keeping track of the revolutions and knowing how many gallons it pumped to the revolution, minus the slippage, we don't know what the slippage is.

Q. Minus what?

A. The slippage.

Q. Have you made a monthly charge against the Water Company for current supplied based on this estimation? You have sent them monthly bills, haven't you?

A. Yes, sir.

Q. Well, will you produce a sheet showing whatever you have got in relation to the charges against the Water Company and the amount of water they pump, whatever you have got.

A. Make a memorandum of that, Mr. De Huff.

The estimate of the electricity used is on the horsepower of the motor, not on the quantity of water pumped.

Q. You seem to have supplied already, Mr. Franklin, to the Commission the gallons of water pumped in January, 1922.

A. That is an estimate.

Q. That was done with your knowledge?

A. That is an estimate. That is what I am telling you; all of those are estimations or estimates. If you were pumping with the standpipe full of water the estimate would not be correct for a standpipe with only two-thirds full, and vice versa. You cannot tell anything about that. One pump may have one efficiency and another pump may have another efficiency.

Q. In this statement that you supplied it appears that it cost $133.60 per million gallons. Is that a reasonable charge in your opinion as an engineer?

A. What?

Q. $133.60 for pumping a million gallons of water.

A. I don't know that is the amount pumped. I told you those are only just estimates.

Q. If it is correct is it a reasonable charge or is it too large?

A. You would have to ask an expert hydraulic engineer on that.

Q. You don't know?

A. I could inquire and find out.

Q. Are you the man who fixed this ultimately in the operation of your business?

A. How do you mean "fixed it?"

Q. You are the man who fixed this rate of charge, didn't you, the General Manager?

A. Fixed the rate of charge 5 1-2 cents a kilowatt.

Q. But when you treated with yourself as Manager of the Water Company couldn't you determine whether you were being overcharged by your Electric Light Company?

A. I think we were. I think we are being overcharged.

Q. Is the charge ten times too much?

A. I could not tell you how much too much.

Q. Would you deny it was ten times too much?

A. Yes.

Q. How much?

A. I cannot tell you. I won't try to put a figure on it. No use of trying to put a figure on something unless you know about it. I want to explain to you again, that we did not base the charge on the number of gallons pumped. We based the charge on the rate of horse power of the pump, the motor on the pump.

Q. Which was estimated.

A. Well, the manufacturer said it was such a horse power.

Q. To go back to this steam plant, how did you allocate the charge for the steam to the Electric Light Plant and to the Gas Plant; was that done by metering the steam supplied the Gas Plant and metering the steam supplied to the Electric Plant?

A. Supplied to the engines, not supplied to the water pumped.

Q. Supplied to the engine?

A. Yes.

Q. Which produces electric current?

A. Yes.

Q. On the basis of those meters the cost of producing the steam was allocated. Isn't it true that your engineer Loeb discovered that the meters that measured the steam which supplied the Electric Plant were wrong so that it was registering something double the amount actually used?

A. Yes, I think he said so.

Q. Wasn't the effect of that, of permitting such a double charge to bring about just double the expense charged up against the Electric Light Company?

A. No, sir. There was only so many pounds of coal used and so much labor used and there could not be any more than that coal and labor cost.

Q. But the way you were measuring this—you had, we will say, 100 per cent. to be charged for coal and you measured the steam supplied the Gas Company didn't you?

A. Yes, sir.

Q. Which we will say was five units. You made a deduction.

A. No, we did not do anything of the kind.

Q. You have two meters.

A. We did not do anything of the kind. We had a meter on the line that went to the gas plant.

Q. You had one.

A. It don't make any difference whether we had one or twenty meters on the electric light line.

Q. Did you have any?

A. Yes, we did. That did not make any difference in the charge to the Gas Company.

Q. We will see if it did not. We will say you charged five units against the Electric Light Company, whereas as a matter of fact 2 1-2 units should have been charged to the Electric Light Company, isn't that the situation?

A. No, sir, it is not.

Q. Isn't that what your engineer reported here to the Board?

A. No, sir.

Q. I will read what he says; I will read from Dey & Zimmermann's report. "The total revenue collected from the Gas Company in 1920 was $21,962 or approximately $10,000 less than the actual cost of

coal alone." Is that so; do you believe it to be true?

A. Read it over again.

Q. "The total revenue collected from the Gas Company in 1920 was $21,962, or approximately $10,000 less than the actual cost of coal alone."

A. Not the actual cost of coal alone for the Gas Company.

Q. Coal alone to the Electric Light Company.

A. For all the coal used.

Q. They go on to say, "If an appropriate portion of the boiler room labor, repairs, depreciation, taxes and fixed charges was added the total loss on this business was approximately $19,000." Do you believe that?

A. No, sir.

Q. You do not?

A. No.

Mr. Temple: That is Dey & Zimmermann's report 1814, one of the exhibits in this case, but not assigned a number.

Commissioner Osborne: Has it been offered?

Mr. Starr: It is not in yet. We are going to put it in; we are going to have a man here to prove it.

Q. In their report Dey & Zimmermann say this: "As explained by the Management, their charges to the Gas Company in 1920 for steam were based on operating costs in the Gas Company's own steam plant during 1918 and 1919." It that true?

A. That is correct. We operated the Gas Company's steam plant and weighed the coal to see just how much coal it took to operate the Gas Plant a month, then we charged that much for coal to the Gas Company for steam, when we were furnishing them through the Electric Light Company's boiler.

Q. Then they say, "In 1921 the Gas Company

was billed production costs only and no charges were made to cover taxes, depreciation or return on the investment, the total of which we estimate at approximately $5,000 per annum." Do you challenge that?

A. No, but we were buying coal, we were buying steam from the Electric Light plant to see if we could not help reduce their overhead, but we did not propose to pay the Electric Light Company more for steam than we could make it for in our own plant. We have been running another test this month, just the same way.

Q. Is the synchronizer—is that what you call it, in the Electric Light Plant, inefficient in your judgment?

A. Been what?

Q. Inefficient.

A. The synchronizer? The two plants run in synchrony.

Q. The exciter, I mean, is that inefficient?

A. The exciter would be efficient if it was used for what it was bought for, the exciting of two generator sets, but it is only exciting one generator set, as I explained this morning. We are now putting in a small exciter to use on the one set.

Q. That is done by recommendation of the engineers of Dey & Zimmermann, isn't it?

A. They and other engineers, too, the Providence Engineering Company's engineers, the Westinghouse people.

Q. They say, don't they, that 100 kilowatts a year will be saved by that.

A. I don't know how much they say. There will be a saving on it, there is no question about that.

Q. They have reported to you, haven't they?

A. I don't remember, I cannot remember their figures. We are taking steps to make that saving now.

Q. Did they report to you that the steam meters on the engine were indicating incorrectly?

A. The Providence Engineering Company's man did.

Q. And were showing nearly double the amount of steam that the engine was actually using?

A. That is what he said.

Q. They say that after the meters had been adjusted the actual steam used by the engine was 5,800,000 pounds, whereas if it had been continued to be metered as before it would have been 10,800,000 pounds. Do you take exception to that as an engineer?

A. I presume they think that is correct.

Q. You are the General Manager.

A. I won't say it is or is not.

Q. You are the General Manager and an Electrical Engineer.

A. I am. I am taking steps to find out. I have not found out yet.

Q. If you don't take exception I don't know who would.

A. I say I am taking steps to find out; that is an exception, isn't it?

Q. This engine at the plant was 500 kilowatts, was it not?

A. Yes, 500 kilowatt generator.

Q. Wasn't there some testimony to the effect that you ground some valves on the engine and produced a saving?

A. They should be ground, they said.

Q. And they are going to be?

A. They have been.

Q. And the saving amounted to 90 kilowatt hours?

A. We have not got around to know what it will save yet. They said it possibly would save.

Q. That is what these engineers say, that will

save 90 kilowatt hours.

A. That is what the Providence Engineering Company's man said, that there was enough steam leaking through there to make 90 kilowatts of current an hour.

Q. That amounts to a saving of about 16 per cent. alone, that little thing, doesn't it?

A. $1.80 an hour.

Q. How?

A. About $1.80 an hour, somewhere around there.

Q. (By Commissioner Osborne.) How long had that been going on?

A. Judge, it is hard to tell whether it has been going on since the time the engine was set up or whether it was just worn in the last few months. It is impossible to tell. It is something you cannot see and you cannot feel it. You have to have an expert test to find out.

Q. (By Mr. Miller.) Boring out these valves, and you put in a new generator, did you?

A. Put in a new exciter.

Q. A new exciter and putting in a smaller pump.

A. Yes.

Q. What was the trouble with the boiler that needed adjustment?

A. The baffle plates had been knocked out. I don't know whether that was done before they made the test or afterwards; I cannot tell.

Q. These improvements are things that you have done or are going to bring about, aren't they?

A. We are working at.

Q. They will all tend to the production of current more economically, won't they?

A. I hope so.

Q, You believe so, don't you?

A.We would not be spending the money if we did not.

Q. Your engineers say so.

A. Yes.

Q. This rate we complain of was fixed by yourself—I don't mean to say that in any offensive way—but really you fixed it and without the sanction of anybody.

A. There was nobody to ask the sanction of.

Q. But your estimation or calculation of what was a proper rate was based on the inefficient operation of this plant as it has been, isn't that true?

A. No, sir, not entirely.

Q. Why isn't that so?

A. It was based on the small output of the plant.

Q. Isn't it so, that if you bring about an economically operated plant this rate which you yourself fixed should be reduced? If not, why not?

A. We hope it can be reduced, yes, sir.

Q. You believe it can be too, don't you?

A. If we can make both ends meet in operating expenses, I do.

Q. Mr. Franklin, when the efficiency of the engine is increased 90 kilowatt hours by boring out the valves, doesn't that mean that the efficiency of that engine which is a 500 KW. engine is increased 90-500ths or approximately 16 per cent.?

A. No, because the engine is not loaded and the generator is not loaded.

Q. You mean not loaded to 500 KW.?

A. Yes.

Q. How high is it loaded?

A. About something less than 200 KW.

Q. If you save 90 you would save very much greater.

A. No, you would not.

Q. Why not?

A. Because you cannot sell the current, you have no sale for it, no use of making it, you cannot

make it unless you can sell it.

Q. But it means that one item will increase the efficiency of your engine about 40 per cent.

A. No, it does not. It will probably increase it 2 or 3 per cent. I have not tried to figure it out, cannot do it. We will know when we get it running what increase it is by the amount of coal we use and by the amount of current we turn out. You see, Mr. Miller, the efficiency of the engine all depends upon the amount of kilowatts it puts out in an hour. If it is loaded it is more efficient than it is if it is not loaded.

Q. You save 90-200ths, whatever that percentage may be.

A. No, you save 92-2500ths.

Q. You save 2500ths?

A. 92-2500ths.

Q. If the efficiency of your engine is 200 KW. and the increased efficiency 90 KW., don't you increase it 90-200ths?

A. That is not the efficiency of the engine, that is the output of the engine.

RE-DIRECT EXAMINATION

By Mr. Starr:

Q. You spoke a moment ago with respect to the baffle plates being broken or damaged in some way, what are those baffle plates?

A. The Babcock & Wilcox boiler is made of four inch tubes running horizontally along the surface of the boiler, not quite horizontally, a little on a slant, and to get the effect of the fire the baffle plates are put in there; in front there is a baffle plate, they are made out of fire clay. It is put down at the bottom of the tubes, it forces the fire up through the tubes and over the baffle plate, and then another baffle plate is back of that which forces the fire down through the tubes, passes under the second baffle plate, goes up back of that through the tubes again.

goes down again and goes to the stack.

Q. (By Commissioner Osborne.) Those baffle plates are deflectors, aren't they, to deflect the course of the flame, take up all the heat on its way out?

A. Yes, force it up right around through the tubes.

Q. (By Mr. Starr.)Those baffle plates being either removed or destroyed, what effect had it?

A. Let the heat go right up the stack.

Q. What did you do to the firemen when you discovered that?

A. I fired them. Instead of they doing the firing, I did the firing.

Q. And they are not in your employ now?

A. No, sir, neither are the engineers in my employ that caused the accident to the engine, or whose negligence made the accident to the engine.

Q. Something has been said with reference to the base ball grounds which is owned by the Electric Light Company. Please explain the circumstances connected with the acquisition of that property.

A. The Electric Light Company wanted a siding into the plant so that it could unload coal, in other words, it wanted a trestle 12 feet high so it could run coal cars up there and dump the coal without unloading them. There was no opportunity to get the trestle in there unless we had more land south of the plant. We tried to buy a strip of land 100 feet wide or 50 feet wide from the man that owned it to put that trestle in, the siding. He would not sell it to us, he said he would not sell it to us unless we would buy the whole lot, so we did finally buy the whole lot.

Q. What did you pay for it?

A. $2,500. Between the time that we bought the lot, or were negotiating for it, the railroad company changed their policy of putting in sidings.

They used to run them originally to the property line without charge, but they informed us about the time we got possession of this lot that we would have to pay for the siding from the switch point, which added about $7500 to the expense of this siding for us. We have not got the money, consequently we had the land on our hands. We hope some time to be able to build a siding there. The lots were doing nothing and the boys in the office wanted to know if they could not have it to play ball on. I told them yes. They said they would go to work overtime on their own time and clean off the brush and level it up. They started in and worked a few nights at it, but I saw that if they would work all summer there would not be any ball played there that year, so I proposed that the Elgawa Association, that is an association composed of all of the men that work for us—

Q. It is a social organization?

A. No, it is social and educational both.

Q. Employees of what companies?

A. The Gas Company, the Water Company, the Electric Light Company and the High Pressure Company, about 150 or 160 members. They have a meeting every week, sometimes lectures, sometimes things to eat, sometimes different men tell their experiences while out on different jobs. We concluded that the Elgawa Association would go ahead and build a ball ground there. I suppose a little of the leveling off of the land was paid for by the Electric Light Company, maybe fifty dollars worth, maybe one hundred dollars worth, not to exceed that, that was before the brush was taken off, all was leveled. After that the Elgawa Association paid the bills, the work was done by the High Pressure Company and the Elgawa Association paid the bills, promised to pay the bills, and put a fence around it, and so on and so forth.

Q. That is the history of the ball ground?

A. That is the history of the ball ground.

Q. If this siding is ever constructed as incidental to the operation of the Electric Light Plant would it be necessary to have this property?

A. We will have to spoil the ball ground and put the siding on there. We cannot get into the plant without the land.

Q. (By Commissioner Osborne.) How much land is there?

A. I guess maybe there is an acre and a half. It is 300 feet wide at one end, 300 feet long, 200 feet wide at the other end.

Q. How much width do you need for a siding?

A. About 150 feet to get a siding in and get it parallel with the boiler house; the full length of the land, 300 feet.

Q. Is there any market for the unused portion of it, assuming you put a siding in there?

A. There might be some time.

Q. Not now?

A. No, not now.

Q. (By Mr. Carver.) Mr. Franklin, in the two exhibits you offer, Exhibit R-4 and R-5, on the first one you state the cost per kilowatt hour at the switchboard for the steam plant and for the bleachery, and the last two items in each of those tabulations are for boiler room fixed charges and engine room fixed charges.

A. Yes, sir.

Q. Can you explain why those two items are different in the two tabulations?

A. I asked Buell and he told me, but it slipped my mind what it was. I think it is fixed on the kilowatt hours, isn't it?

Q. It is on the kilowatt hour basis, but presumbaly it should be fixed on the same. Is there any reason why the total kilowatt hours should be dif-

ferent in the two tabulations?

Commissioner Osborne: Is that the total cost per kilowatt hour on the switchboard, is that what you mean?

Mr. Carver: Yes.

A. Yes, because there is a different number of hours output for each month.

Mr. Starr: That refers to November.

Q. The same month?

Commissioner Osborne: You refer to Exhibits R-4 and R-5.

Mr. Carver: R-4 only.

Commissioner Osborne: You said R-4 and R-5.

Mr. Carver: I mentioned those first, and then said, confining it to Exhibit R-4, the last two items on the tabulation, boiler room fixed charges for the steam plant is five and a fraction mills and for a comparison of that with the bleachery it is eight and a fraction mills. Presumably those tabulations, comparisons should be made with respect to the same number of kilowatt hours, should they not?

Witness: No, they were a different number of kilowatt hours output each month of course. I would have to ask Mr. Buell what it was. I did ask him what it was. I noticed the difference and asked what it was and he told me, but it slipped my mind.

Q. You will furnish us an explanation of that?
A. Yes, I will.
Q. And the engine room fixed charges also.
A. Between November and December.

Commissioner Osborne: On the November statement shown in Exhibit R-4, is that right?

Mr. Carver: Yes. For the steam plant, boiler room, fixed charges, 5.13 mills, for the engine room, fixed charges, steam plant, 4.09 mills, and for the bleachery boiler room 8.13 mills and the engine room is the same.

Mr. Starr: Would that difference be accounted for in the loss of current from the bleachery to the switchboard of the Electric Light Plant?

Mr. Carver: I could not tell from the heading.

Mr. Starr: The KW.'s would be somewhat different, would they not?

Mr. Carver: It would hardly seem as though there could be that much difference.

Witness: I will have to ask him to write that.

Commissioner Osborne: Mr. Miller, will you consent that that information when furnished shall go into the record as part of the record?

Mr. Miller: I think so.

Commissioner Osborne: It is needed by our engineer for the interpretation and elucidation of the exhibits.

Mr. Miller: I consent it be used.

Q. Are you familiar with the monthly reports filed by your company?

A. Yes, sir.

Q. Your monthly report for November shows a production expense of 6.3 cents per kilowatt hour. I was going to say at the steam plant. Presumably

that is an average of both the steam and hydro electric plant. Can you state whether that covers both plants or not, those items in the second column of that statement, cost per kilowatt hour?

A. I think that covers both plants.

Q. Should that figure be comparable with the cost per kilowatt hour that you show in Exhibit R-4?

A. Should that be what?

Q. Should that be comparable with the cost per kilowatt hour for the steam plant at the switchboard.

A. What we show there was just for the steam plant at the switchboard, not including the hydro plant.

Q. Is this cost per kilowatt hour at the switchboard or is this cost per kilowatt hour sold?

A. Sold.

Q. In the monthly report?

A. In the monthly report, sold.

Q. Your cost per kilowatt hour at the hydro electric plant is considerably less than the steam plant, is it not?

A. Yes.

Q. How would you account for that difference of nearly 2 1-2 cents per kilowatt hour, even arriving at that difference by including your hydro electric plant, which is a much cheaper source of power?

A. I don't quite get you.

Q. In other words, can you reconcile those two costs per kilowatt hour? I know they are on different bases, but even at that the difference between them is much more than I can reconcile in my own mind.

A. 8.9 cents, and 3.4 cents, is that what you are getting at?

Q. The figure as given in your exhibit R-4 for the month of November, the same month, the cost per kilowatt hour at the switchboard, steam plant, is 3.89 cents.

A. Yes.

Q. The cost per kilowatt hour sold for that same month, including in that average—

Commissioner Osborne: Which exhibit are you reading from now?

Mr. Carver: This is the monthly report for the month of November.

Q. The cost per kilowatt hour sold for that same month, including both the steam plant and the hydro electric plant, which should be a lower figure than from the steam plant alone is 6.3 cents.

A. Everything is included in there, the overhead, the interest on the investment, the street lighting and repairs and everything.

Q. (By Commissioner Osborne.) Included in where, which figure?

A. The 8.9, cost of current, yes, sir.

Q. (By Mr. Carver.) The figure I am referring to is production cost, 6.3 cents.

A. You will have to ask Mr. DeHuff how he arrived at that.

Commissioner Osborne: Is he here?

Witness: Yes, he is going to be put on the stand.

Q. (By Commissioner Osborne.) You did not make these figures, did you?

A. Mr. De Huff made these figures; he is our head accountant.

Q. (By Mr. Carver.) Has he made any attempt to reconcile that same item of cost as shown on Exhibit R-4 with the figures testified to by Mr. Loeb at the last hearing?

A. No, I have not. I do not know what the figures Mr. Loeb testified to were.

Q. Referring to the construction of your new

plant, what efforts did you make to purchase any turbine equipment for that plant?

A. Originally?

Q. Originally, yes, sir.

A. We made inquiries of the Westinghouse people and made inquiries of the General Electric and made inquiries of another firm, I cannot think of their name just now.

Q. Was that in 1915 or 1916?

A. 1915 and 1916, early in 1916, I think; it might have been in 1915. It is so long ago I cannot remember the exact date.

Q. Your recollection is the best delivery you could obtain was two and a half years.

A. From two years to two and a half.

Q. Did you get that information by correspondence?

A. I think I have some correspondence. I have not looked it up to see, but I know in almost every instance their salesman visited us.

Q. What explanation would you have of the fact that other utilities in the State purchased equipment of that nature during the same period.

A. They probably waited for it.

Q. Did you investigate the possibility of obtaining a source of supply, or a supply from any other source than the Millville Manufacturing Company, or a plant of your own?

A. The Atlantic Company has been around and wanted to sell us current, as well as the East Jersey. We never got a price from either one of them, they never would give us a price.

Q. (By Commissioner Osborne.) Did you ever ask for a price?

A. Not a definite price, no.

Q. (By Mr. Carver.) The East Jersey?

A. The East Jersey, I think they furnish Bridgeton. The Electric Company of New Jersey.

Q. (By Commissioner Osborne.) You say they have been around and wanted to sell you current without quoting a price?

A. Oh, yes. They wanted to buy, they wanted to force us out, scare us out.

Q. You said they wanted to sell you current.

A. That was the ostensible reason.

Q. (By Mr. Carver.) Did you ask them for any price for current?

A. Yes, sir.

Q. They did not quote you any?

A. No. The Electric Company of New Jersey, about six months ago in reply to a verbal request I made them when talking with the Superintendent, sent me their schedule of retail prices.

Q. Did you figure out what that would cost you?

A. No, I did not. It is too complicated for me to figure out. It would be for you, pretty near.

Q. I don't think so. Did you take the matter up with them in 1915 when you contemplated building this new plant?

A. I did not. I don't think they were in a position, either one of them, to supply us current in 1915. I am pretty sure the East Jersey was not.

Q. Do you know whether or not they were in a position to furnish it?

A. I know the Atlantic City Company wanted to get into Millville, did all they could to get the street lighting contract away from us.

Q. You did not ask either the Electric Company of New Jersey or the Atlantic City Company at that time to quote you?

A. We did not think it was practical to invite either one of them to come to Millville.

Q. Did you make any complete estimate of what it would probably cost you to supply your needs from this new steam plant prior to the building of

it?

A. We thought we could figure what our needs would be for the next five years, possibly.

Q. You misunderstood the question. Did you make any estimate of what it would cost you to supply your needs by that plant on a kilowatt hour basis?

A. No.

Q. I understood you to state that you had asked the Millville Manufacturing Company for a price at which they would supply you with power, I presume all of your power. Did you ask them for a price at which they would supply it—just what statement did you make about that?

A. We have asked them to supply us power at different times, and they originally told us they could not do it, they did not have the capacity.

Q. Did you take that matter up with them in 1915?

A. Oh, yes. They had no capacity until 1919. Their own machines were overloaded, and they had no thought that I know of, of putting in extra machines. They supplied us break-down loads at 2 1-4, 2 1-2 and finally at 3 cents a kilowatt.

Q. Did you make any inquiry in 1915 as to what price they would supply you with any definite amount of current?

A. I could not answer that question very satisfactorily because there was no correspondence of any kind between us on the subject. Whatever there was was just verbal.

Q. Did you at any time or have you at any time furnished them with any definite specifications of what power you would like to obtain?

A. No, sir.

Q. (By Commissioner Osborne.) So that the reason that they were waiting to furnish you a price was that they were waiting for that information?

A. The Millville Manufacturing Company?

Q. Either of these companies that wanted to sell power.

A. They never asked us for any such specifications, any of them.

Q. (By Mr. Carver.) You have never furnished them with any?

A. No, sir.

Q. What was the nature of your negotiations with them? If you furnished them no specifications of what you needed how could they furnish you a price on some uncertain indefinite quantity?

A. I don't know that they could. To be very frank with you and tell you, we were not inviting the Jersey Electric Company or the Atlantic City Company to come to Millville.

Q. Of course the Millville Company was already there, the Millville Manufacturing Company. I was referring to them now in that question.

A. The Millville Manufacturing Company, you can consider that the same as any other outside company as far as we are concerned.

Q. Then you have never obtained a definite price from any of those three sources?

A. No, sir.

Q. (By Commissioner Osborne.) Never made an effort to, have you?

A. No, sir.

Q. Never desired to get current from those sources.

A. We never thought we wanted current from those people.

Q. Never ascertained whether you could buy it cheaper than you could make it?

A. I did not see any reason why we could not make it just as cheap as they could.

Q. You do not make it in your steam plant as cheap as you made in it your other plant.

A. As cheap as we did in the hydro plant, no.

Q. (By Mr. Carver.) In your Exhibit R-4, the cost, even at the present break-down rate from the Millville Manufacturing Company, would be less than from your own plant if you left out the fixed charges on the steam plant, would it not?

A. But you cannot leave them out. The steam plant is there.

Q. Of course the steam plant is there now, but in 1915 you should have left them out, shouldn't you, if you were figuring on it at that time?

A. We had no desire to buy current from the Millville Manufacturing Company at that time.

Q. (By Commissioner Osborne.) If you abandoned your steam plant because it was not economical to operate, then that overhead would be eliminated, wouldn't it, because the property would not be used and useful.

A. It would be a loss to us, however. I do not see how you can get out of that part of it; it would be a loss to us.

Q. Have you amortized it in any way?

A. We are amortizing it every year.

Q. Making provisions for it?

A. Yes.

Commissioner Osborne: It might be cheaper to take the loss, cheaper for the consumers to take the loss than to go on in this way.

Q. (By Mr. Carver.) Do you know at what time the bleachery installed the present transformers that are used in supplying you with power?

A. No, that is not on that paper.

Mr. Starr: The twenty-five hundred one?

Q. That is the generator. In addition to that they have to step up the power.

A. They have two sets of transformers there,

one that was put in when they first commenced giving us power and the other was put in I think some time last year, but I cannot say exactly when.

Q. Are those transformers of any use to that company as far as you know, except to furnish you with current?

A. I do not think they are.

Q. Then presumably they were put in for that purpose.

A. Furnishing us break-down current.

Q. And the capacity of those transformers is sufficient to furnish you with all the current you may need at any time.

A. I am not sure about that, because I do not know what their capacity is.

Q. (By Commissioner Osborne.) What company is that, the manufacturing company?

A. Yes.

Q. If your relations are so strained with the manufacturing company, how is it you can get them to accommodate you with this break-down current and put in transformers for you, on the theory that you may or may not use them?

A. Mr. Lewis done it without any request from us.

Q. Why couldn't you get all the current you need all the time from them?

A. They did not have it until 1919.

Q. They have it now.

A. I do not think Walter Wood and George Wood could agree on the price or the time of service.

Q. If you could get it now for less than you can manufacture it in your steam plant, I suppose you would take it, wouldn't you?

A. For less than we could manufacture it, and the overhead charge.

Q. How do you figure that overhead, what do you take into consideration?

A. Interest and taxes.

Q. On what, on the building?

A. On the building and machinery.

Q. Including this engine and boiler?

A. Yes, sir.

Q. Before you put this engine and boiler in, did you make any effort to buy this current from the manufacturing company?

A. They did not have it; they had no capacity to supply us.

Q. How do you know?

A. Because I just read there this forenoon what their capacity was, and they were overloaded, they told us, requested us to get off their line, they did not want to furnish.

Q. That is the manufacturing company?

A. Yes, sir.

Q. They have increased their capacity since then.

A. Yes, put in the 2500 kilowatt machine in 1919.

Q. (By Mr. Carver.) Have you any reason to believe that they would not have installed adequate equipment to supply you if they had had any assurance you would contnue to buy it?

A. Well, I could not answer that question.

Q. You did not find out?

A. Any deal we have ever had there has been some string to it. For instance, as I told you this forenoon, we have a piece of land down there that they want—

Commissioner Osborne: Don't tell us again now. We heard it.

Witness: He might not have heard it. I don't know.

Q. If they put those transformers in at their own volition, as you said, wouldn't that indicate

they were anxious to get the business?

A. I do not think it would.

Q. What other explanation would there be?

A. You ask them. I cannot tell you. You have been asking them questions. You go and ask them.

Q. You spoke about poor regulation from the supply from the Millville Manufacturing Company. Isn't that due, in part, to the size of your transmission line between the bleachery and the hydro-electric plant?

A. No, I do not think so. If it was slow regulation it would be, but when it jumps instantly at times, that is not due to the transmission lines.

Q. How much variation is there, do you know, in the voltage?

A. I do not know. I know when we are taking it from them we do not get more than 100 or 102 volts downtown evenings. On our own lines we get 112.

Q. With reference to those baffle plates that you were speaking about on the boilers, were any baffle plates installed originally do you know?

A. Yes, sir.

Q. You are positive they were installed in the first place?

A. Yes, sir, been installed twice.

Commissioner Osborne: That is part of the regular equipment of the boiler?

Witness: They are.

Q. The boiler is designed for that purpose?

A. They are the regular equipment of the boiler.

Q. (By Mr. Carver.) What explanation have you in your own mind as to the short time those first baffle plates lasted.

A. I cannot tell you. I expect the carelessness of the firemen had something to do with it.

Q. In what condition are they at the present time?

A. They are out. We are just putting in new ones. I guess they just came yesterday.

Q. What happened to the second set?

A. When we made the examination they were not there.

Q. I beg your pardon?

A. When we made the examination ten days ago they were not there. That is the only answer I can give you.

Q. (By Commissioner Osborne.) Then the boiler has been operating for an indefinite period of time without them at all, and the heat going up the chimney.

A. I don't think they were. They might have been for thirty days, forty days, something like that.

Q. How could they have disappeared? They are pretty big.

A. Yes, five by eight inches, something like that, three inches thick.

Q. Quite a few of them.

A. Five hundred, I guess.

Q. Something that somebody would have to go to some effort to lift.

A. They punch them out when cleaning the fires.

Q. That is the way they may have disappeared then?

A. Yes.

Q. And carted out in pieces with the ashes.

A. Yes, sir. They should not do it, but it would be just carelessness, they did do it.

Q. (By Mr. Carver.) Would it be possible for all of them to be gotten out in that way?

A. They were not all gone, but there were enough gone so that it would give a straight away for the heat to go right straight through and go up the stack.

Q. Looking at this matter from a business proposition at the present time, looking at the matter from a plain business proposition, what would you say is the difficulty at the present time or has been the difficulty with your plant?

A. We have not got the output.

Commissioner Osborne: You mean with the operation, don't you?

Mr. Carver: Everything, the result.

Q. (By Commissioner Osborne.) With your plant, not with your output. What is the matter with your plant, if anything, in your judgment?

A. There is not anything the matter with the plant. There may be something the matter with the men that have been operating it.

Q. You have a superintendent, haven't you?

A. Yes.

Q. Who is he?

A. His name is Bittle.

Q. Can't he run the plant?

A. He ought to be able to, but has not been doing it very well.

Q. Have you got him yet?

A. Got him yet until I can find another one.

Q. (By Mr. Carver.) You think your equipment then is everything it should be?

A. I think it will be when we have it repaired and put in shape this time and ready to start up again and do start up again.

Q. Do you think that part of the losses that have taken place, some of which have been mentioned here, are items which could have been corrected with proper oversight on the part of your superintendent?

A. Possibly if the superintendent paid more attention to business there would not have been quite so much trouble. I don't think we would have had

the break-down on the engine if he had been up to snuff, tending to business. That was purely and simply carelessness.

Q. (By Commissioner Osborne.) Do you think you can charge the municipality for that?

A. Well, it goes into our repairs, goes into our operating expenses.

Q. Yes, I know they do, but you are not supposed to operate inefficiently. You are supposed to base rates on an efficiently managed corporation.

A. I think all companies are subject to carlessness and break-downs, they all seem to have them.

Q. They do not all result from inefficiency of management.

A. Bridgeton is out of light once or twice a month right along all the time.

Q. That is a municipal plant?

A. No, that is the East Jersey. It is not a municipal plant, it is the East Jersey plant.

Mr. Starr: That is the Electric Company of New Jersey that Mr. Carver is talking about.

Q. (By Mr. Carver.) Don't you think you had an unusual amount of either bad luck or bad management on the part of your plant operators?

A. That is not a good question to ask me to answer.

Q. (By Commissioner Osborne.) Why not? You are responsible for the management of the company; you are the one to go to with a question like that.

A. We certainly have had our share of misfortunes.

Q. (By Mr. Carver.) How do you explain the fact that you say you have such a poor demand for your output in a city the size of Millville, a rapidly growing city, which has been testified to. Isn't there some way you can develop business, electric light business?

Commissioner Osborne: Why can't you sell your goods; what is the matter with you? Why don't you sell more current to more people?

Witness: We are trying to all the time.

Q. (By Commissioner Osborne.) Is there anything wrong with your salesmanship?

A. Possibly might be, I don't know.

Q. Maybe that is the trouble. Maybe you are not delivering the goods the people want and the way they want it.

A. The only trouble I can see is the price.

Q. Too high?

A. I acknowledge it is too high; I know it is too high.

Q. Higher than other companies similarly situated sell for?

A. I don't know than other companies similarly situated, but higher than other companies around New Jersey.

Q. Does it cost your company more to manufacture your current than it costs other companies furnishing current to communities of similar size, furnishing the approximate amount of current?

A. I don't think it costs us any more for the same amount of output.

Q. If it does for the same amount of output then you, I suppose, will admit there is something wrong with your management or with your plant.

A. Possibly something wrong with the plant.

Q. And you would not expect to charge that difference to the public, would you?

A. We would not exactly want to stand the loss of it.

Q. Of course you would not want to, but you are under obligations to furnish efficient service, otherwise you are supposed to quit trying. That is the obligation you assume when you assume to be a public utility.

A. I think we are furnishing efficient service.

Q. At a reasonable price?

A. I won't say that.

Q. If you cannot furnish service at a reasonable price, because you cannot manage it and equip it properly, the answer to that is you ought to quit and let somebody else try, isn't it?

A. No, I do not think we should be asked to throw up our investment there.

Q. Don't you think that any company that cannot make good ought to throw up its investment, if that extreme course is necessary?

A. No, sir.

Q. You think the public ought to go right on suffering under the burden?

A. I think they ought to take enough current to warrant the plant to operate.

Q. Whether they need it or not or want it or not.

A. The ones that take it probably take all they want.

Q. (By Mr. Carver.) What explanation have you of the fact that the consumption of current and electric power in this community is so small in comparison with the population, as compared with other communities?

A. Well, Millville is a different community from most any other community. It has not the well-to-do people living there, for instance, that Vineland has got or Bridgeton has got. In Millville, I will say, very near every man is a working man. He probably is getting good wages most of the year, but they have not got the money to pay for the pleasures of life that they have in other towns.

Q. Do you know how your gas consumption compares with the consumption in other towns of like size?

A. Small per meter.

Q. (By Commissioner Osborne.) Your savings bank deposits then ought to be correspondingly large if the people are as economical as that.

A. No, I think the consumption of electricity is smaller per meter than it is in other towns. I have not compared it, but I suppose it would not be a very hard matter to compare it.

Q. Do you have many service complaints?

A. Very, very few.

Q. You are dealing with a satisfied community so far as service is concerned?

A. So far as service is concerned I do not think there is a company in the country giving better service than we are. Never hear a complaint about service.

Q. (By Mr. Carver.) If your trouble is poor demand, low output, what efforts are you making or have you made to get a larger power consumption?

A. Well, I don't know—we could not start factories there for the sake of getting electric light consumption and we cannot furnish the householders with wiring free or anything of that kind for the sake of getting a higher consumption.

Q. Are you in a position to furnish any of these manufacturers that are making their own power with power as cheap or cheaper than they can make it themselves?

A. We could not furnish the Millville Manufacturing Company with power, nor we could not furnish Whitall-Tatem Company with power; we have not the capacity.

Q. Are there any companies you could furnish as cheap or cheaper than they could furnish themselves?

A. We are furnishing Whitall-Tatem and the Millville Bottle Works—I do not mean Whitall-Tatem, I mean Wheatons.

Q. The proposition seems to travel around in a

circle, your rates are high because costs are high and you cannot get the business because—

A. We are getting business.

Q. I mean power business.

A. No, we cannot get power business, but we are getting commercial business right along, we are getting it at the rate of twenty-five or thirty houses a month.

Q. (By Mr. Miller.) Did you refuse to give power to the International Glass Company or the Calores Company?

A. No, sir.

Q. Isn't it true you refused to supply them and they complained to the City Commission and as a result arrangements were made by which the Millville Manufacturing Company ran current into their plant over the trolley line?

A. No, sir.

Q. What is the truth about that?

A. The Calores plant is about three quarters of a mile from our works and there was no opportunity to sell light or power to anybody between the two points. We asked the Calores Company to pay for the cost of constructing the line to their plant and we would return it to them one-half of their bills each month until it was paid back . That is what we offered to do with the Calores people and with Kimpton-Haupt & Company.

Q. You wanted those people, the Kimpton-Haupt Company to build their line too, didn't you?

A. I wanted them to furnish money to build the line and we would return it to them as they used current, at the rate of 50 per cent. of their bills each month.

Q. Did they put their own plant in?

A.Yes, they put in an oil plant.

Q. Did the International put in their own plant?

A. No, sir.

Q. Did they get a supply from the Millville Manufacturing Company?

A. They got a 5 horsepower motor from the International—from the trolley line, but they had been getting that for the last ten years, eight years.

Q. The Calores people take their power from the Millville Manufacturing Company?

A. There was only just this one matter on the line.

Q. (By Mr. Starr.) The Calores and the International are the same, aren't they?

A. Yes.

Q. (By Mr. Miller.) Haven't you refused to extend your plant, taking in power consumers, unless they build the line?

A. We did at one time, during the war, if they would pay for the line, but we would return the money.

Q. How about now, with the Millville Iron Works?

A. We told them we were ready to do it whenever they wanted the plant.

A. At whose expense?

A. At our own expense.

Q. When did you tell them that?

A. A year ago.

Q. So you are ready to extend a power line whenever they want it?

A. Yes, sir.

Q. If Mr. Fleetwood, of the Millville Iron Works, said that a week ago he is wrong, is he?

A. Yes, sir, he is; if he said it six months ago he is wrong.

Q. Recently you have had considerable demand in private lighting, haven't you?

A. Yes, sir, we are putting on about thirty customers a month.

Q. Prior to a year or two ago you had great

trouble if anyone wanted to connect, didn't you?

A. During the war time, we did not want to make main line extensions unless they helped pay for it, the money to be returned to them.

Q. That policy continued until about when, a year ago, two years ago?

A. Until after the war was over, until money was a little more plentiful.

Q. How many years was it in vogue, four or five years?

A. Oh, no, that was in vogue maybe two years.

Q. (By Mr. Carver.) I want to ask one more question and that is why you would object to securing a supply from either the Atlantic City Electric Company or the Electric Company of New Jersey?

A. Because they are both antagonistic to us and want to buy our plant and want to get into Millville in order to run us out.

Commissioner Osborne: They may get in there, unless you are able to furnish the necessary service at a reasonable price, whether you want them there or not.

Q. If you purchased power from either the Atlantic City Electric Company or the Electric Company of New Jersey, to supply your consumers, it is not your idea that they would be permitted to compete with you for retail business, is it?

A. I do not think they would, but if we buy power from the Jersey Company, the Atlantic City Company would try to.

Commissioner Osborne: They cannot get in there without the consent of this Board as competitors, and that being the case, if you were furnishing reasonable service at a reasonable price, of course no company would get that consent, unless there was some reason for it. We cannot consent nowadays to duplication of ser-

vice; that always brings about bad results. How, therefore, would the mere purchase of power by you from them be detrimental to your interests in that respect?

Witness: It might not be if we could buy it from them cheap enough to cover the overheads that we already have.

Commissioner Osborne: That might be taken care of by amortization, at least so much of it as you are justified in expending, if you didn't continue the use of that plant.

Witness: Would you advise taking power from a company that had to bring it across the Delaware River?

Commissioner Osborne: I advise taking it from any company that could sell it to me cheaper than I could make it myself. In fact, I think it is your duty to do that if it has any effect on your rate, if it has the effect of lowering your rate. You cannot justify manufacturing power at an excessive rate to resell it to the community at a rate which you admit is too high, if you can buy that power and resell it for less money. No utility has any right to sit by and say, you have got to play the game my way and if you don't like it my way you cannot play it at all.

Witness: Would the Utility Commission consent for us to amortize that investment?

Commissioner Osborne: So much of it as was judiciously and properly expended. It might be necessary to carry it as an overhead, and justifiable to carry it as an overhead, as a standby unit.

Mr. Starr: Conditions would have to be considered as they were when this steam plant was built.

Commissioner Osborne: Oh, yes.

Mr. Starr: Not what has developed since.

Commissioner Osborne: I do not suppose there is any great question about the inefficiency of the steam plant, judging by the records of the cost of production.

Mr. Miller: Mr. President, this witness, who is the General Manager, admits his rates are too high.

Commissioner Osborne: Are higher than they ought to be, yes.

Mr. Miller: Doesn't that end this case?

Commissioner Osborne: No, not necessarily, because he says they are too high because you do not buy enough electricity. You say they are too high because he is not running an efficient plant. That is a question this Board has to decide; you have an issue there.

Mr. Carver: That is what I had in mind when I asked Mr. Franklin about traveling around in a circle. How are you going to cut that knot and get out of the circle. The rates are high because the costs are high and the costs are high because the output is low.

Commissioner Osborne: As a matter of fact if you manufacture your goods at a price that will enable you to retail them at a price the people are willing to pay to get that service, you sell the goods. It is just a business principle.

Witness: Could you amortize the loss on the monthly sales until such time as the output becomes large enough to warrant—

Commissioner Osborne: If you say you are

not selling all the people you ought to sell in that town there is something the matter with your salesmanship or the goods you have to sell, one of those two things. If the customers are there, there is no reason why you should not sell them.

Witness: I suppose you would say the price was too high.

Commissioner Osborne: That may be one of the reasons. Therefore you ought to use every effort to bring down your costs so you can sell your goods at less money.

Witness: We are trying to do that.

Commissioner Osborne: Do you advertise your wares; do you have salesrooms where you can show how attractive it is to use electricity and tell them how cheap you are selling the goods?

Witness: We have solicitors. We are not telling them how cheap we sell the goods.

Commissioner Osborne: That is one of the attractions. You might better sell your goods perhaps now at little or no profit for the sake of the customers you build up later on, and by a larger volume of sale develop a profit.

Witness: That is just what I was trying to get at through your Commission. If we run three or four years at a loss, to advertise our business, why shouldn't we be allowed to capitalize or amortize that loss? Any plant when it first starts out does not have a sufficient consumption to carry it along.

Commissioner Osborne: Well, you might be, especially since the recent decision of Judge Swayze, where he says if the Commission fixes

a rate and the rate brings about a loss, the company is entitled to have that loss recouped in future rates. That is the latest pronouncement of the Supreme Court of this State on that subject. Therefore it might be possible to do that, taken in conjunction with the fact that you are entitled to have these rates fixed by the Board and the fact that in the O'Brien case, I think, Judge Swayze said that the limit of a rate in height is what the people are willing to pay. From your testimony, I gather that your rate being too high, that being the reason you haven't more customers, that you have reached the limit of your rate, therefore it is too high.

Witness: We are taking on about thirty customers a month.

Commissioner Osborne: If it is too high it ought to be reduced, and the fact that people do not buy the electricity indicates it is too high. That is the only way I know to determine when you have reached the saturation point in piling on a rate; people will not pay it. If that is so then perhaps you would be justified in reducing, perhaps you would be justified in reducing your rate or having this Board reduce it, and if that reduction brought about a loss, then under the Hackensack case you would be entitled to have that loss made up in a future rate, as you say, after you had developed more customers at the lower rate and increased the volume of your output.

Witness: I think we would be willing to have our rate reduced to some certain figure if we were going to be allowed to make the loss in the next two or three years, in gaining a lot of customers.

Commissioner Osborne: But we would not

make up any loss that was due to inefficient management of your plant or equipment. We only allow any loss that was due to a low rate.

Q. (By Mr. Carver.) Based on this Exhibit R-4 the costs that are shown there, the savings you expect to make, what base rate do you figure it necessary under those conditions to take care of your expenses?

A. I think we will come out at 2 1-4 cents on the switchboard.

Q. What would that mean for a retail base rate?

A. That would all depend on the output, of what we were able to sell.

Q. On the basis of the same sales you are making now, would that mean any reduced rate right now?

A. That would reduce the rate about one cent right now, but I am free to say that ain't enough, I know it ain't enough.

Commissioner Osborne: Reduction?

Witness: Yes.

Q. (By Commissioner Osborne.) You think a material reduction in your rate would result in a material increase in your output, don't you?

A. I am in hopes it would.

Q. That is a natural result, isn't it?

A. Not always.

Q. If you have got the market.

A. You have not got the quantity of market.

Q. You have the quantity but not the quality, you say.

A. Not the quality of market. You have no power sales, you cannot get them, that is what you want, is power sales to make the engine, whether it is a turbine or a reciprocating engine, to make it efficient, that is a load.

Q. You have not got the factor there to give

you a good load.

A. No.

Mr. Miller: If you could get the custom of the large manufacturers you would have a splendid load.

Commissioner Osborne: He cannot get it if they can manufacture cheaper than he can sell to them.

Mr. Miller: You have to give them a rate.

Witness: Do you want to give them a rate less than it costs you?

Mr. Miller: Millville is a manufacturing city.

Commissioner Osborne: He has to give a rate based on his cost.

Mr. Miller: He has to give a rate to beat what they can get.

Commissioner Osborne: It might be important to give them a rate practically at cost to build up his load on his machinery which he says works inefficiently unless they have a fuller load.

Mr. Miller: I want the Board to understand there is a great demand for electric current in Millville, for power. Whether they can beat the private plant or not is for them to say.

Q. (By Mr. Starr.) What plants are there that could be furnished by your company, that are not already furnished, that do not have their own equipment?

A. I do not think we could furnish Whitall-Tatem Company power if we would give it to them.

Q. Or the Millville Manufacturing Company?

A. No.

Q. Outside of those two?

A. There are no power plants that we are not furnishing except the Kimpton-Haupt & Company.

Q. That is the concern that refused to help finance the running of the line?

A. Yes.

Q. The other concerns you are in a position to furnish?

A. Yes, sir, are furnishing.

Q. So that the power consumption would not be materially increased if you did have a reduced rate, so far as that feature of the business is concerned?

A. I went over a month ago, I had our sales for November analyzed at the present prices. I knew what we were getting, of course, but I had the commercial sales analyzed at the rates we charged before we made the raise, 12 cents a kilowatt, that was the commercial rate, with 10 per cent. discount, I think, and I had the power rate analyzed at 3 1-2 cents instead of 5 1-2 cents, and at the same output that we have got now we would lose five hundred dollars more a month than we are losing. In other words we lose about five hundred dollars; if we go to that rate we would lose about one thousand dollars with the present output. If we could double the output or if we could only half-way double on it, 25 per cent. on it, 50 per cent. on it, that would be enough to bring us out whole.

Q. Where are there any other manufacturing plants in Millville that would justify any assumption at all that you could double the power consumption?

A. You cannot double the power consumption in five years with the plants that are there now, or any that you can see.

Q. Take commercial lighting, are there any houses that are wired in the town that are not fur-

nished with electricity?

A. No, all that are wired are furnished with electricity, but we are wiring them up very fast. I presume at the end of 1923—we have a little over eleven hundred consumers now, I presume we will have fourteen hundred.

Q. (By Commissioner Osborne.) Are you wiring them as fast as the demand is made on you?

A. Yes.

Mr. Miller: Judge, I think they are. I know I waited. I made first a contract to have an office into which I moved wired, made an agreement in August with an electrician, who promised to put it in but did not. I made another agreement with another man who promised to do it and he did not, said he was so busy. Finally Franklin's High Pressure Construction Company came along and they put it in.

Commissioner Osborne: Promptly?

Mr. Miller: Reasonably promptly.

Witness: Within twenty-four hours after you give us notice.

Mr. Miller: I want to say there was a demand for electric current last fall. I happened to know. I waited two months before I could get the office wired.

Witness: We are not to blame for other people's slowness.

Commissioner Osborne: Has there been any effort by the municipality to buy your plant and operate its own, as a municipal plant?

Witness: No, I could not say they had.

Mr. Miller: They just talked about it. I think myself they would like to buy it, if your

Honor please.

Commissioner Osborne: Why don't they?

Mr. Miller: Because these people will not sell.

Commissioner Osborne: Can't you condemn it?

Mr. Miller: I think I could, yes. I think the town would buy their plant. I honestly believe that is the real solution.

Commissioner Osborne: One thing is certain. This intolerable condition of this company claiming its inability to function as a utility because two owners of stock happen to be at loggerheads cannot continue very much longer. That has got to stop or be stopped somewhere, if that is the trouble, two men cannot get into a quarrel and hold up a whole community.

Mr. Miller: Judge, Mr. Ware here has charge of the department, he says the city he thinks, would be glad to buy this plant. Why don't you say you would sell it, Franklin?

Witness: I haven't got the say on that score.

Commissioner Osborne: Mr. Franklin does not claim to own the plant and does not say he has power to speak for those who do. What this Board has got to do is find out what the trouble is here and see if we can bring about some method of correcting it.

Mr. Starr: Conditions may improve with these economies that are being installed with reference to the steam plant. It is almost impossible now to prophesy what the future will bring forth as to the cost of operation.

Mr. Carver: It seems to me there is a very vital matter in this case, both to the company and to the public and important for the Board to know, and that is whether or not Mr. Franklin's belief that he could not install some other kind of equipment which would presumably—the consensus of opinion is would have been more efficient, is correct or not. He built the plant, started to build the plant in 1915 and he said to get service would have taken two to two and a half years. The plant went in operation in 1920. It seems to me that Mr. Franklin ought to justify beyond a doubt his statement.

Commissioner Osborne: He either will have to justify it or have it disallowed as far as this case is concerned.

Mr. Carver: If he has any correspondence bearing on that subject it seems to me he ought to submit it.

Commissioner Osborne: You see this Board cannot, in justice to the public, allow a company to make capital expenditures injudiciously and inadvisedly and then charge the public with it. A utility in this day and generation is in a position where it must give an account of its stewardship in the sense that it assumes obligations with the privilege of being a utility. The day when they could arbitrarily do as they please and assume "the public be damned" attitude which we all were so familiar with some years ago, is past.

Witness: No, Mr. Commissioner, we are not tryng to assume that attitude.

Commissioner Osborne: I am not indicating you are assuming that attitude at all. I am simply saying that your company and every

company now must take the responsibilities which go with the privileges which it exercises and one of those responsibilities is to manage its business efficiently so that the public may have the benefit of it. I think we all recognize that nowadays.

Mr. Miller: I would like to ask Mr. Franklin what he has to say about selling the plant to the City.

Mr. Starr: Mr. Franklin, it seems to me, is not in a position and ought not to be obliged to make any statement.

Commissioner Osborne: He does not have to. He does not own the plant. I understand he is the Manager.

Mr. Miller: What have you to say about it, Mr. Franklin? Are you willing to make any statement?

Mr. Starr: I am not willing to have him make one at this time.

(Adjourned until Tuesday, February 13th, 1923, at the State House, Trenton, N. J., at 11:00 o'clock A. M.)

BOARD OF PUBLIC UTILITY COMMISSIONERS

Trenton, N. J., Tuesday, April 24th, 1923.

IN RE INVESTIGATION OF RATES MILLVILLE ELECTRIC LIGHT COMPANY.

Before the following Commissioners:
HARRY V. OSBORNE, Esq., President,
FREDERICK W. GNICHTEL, Esq.

For the City of Millville appears:
LOUIS H. MILLER, Esq.
For the Millville Electric Light Co. appears:
LEWIS STARR, Esq., by
F. T. LLOYD, JR., Esq.

Mr. Miller: If your Honor please, Judge Starr told me last night he would not be able to be here. He said he would send some one up with the motion to adjourn.

Mr. Lloyd: If your Honor please, Judge Starr is engaged in the Circuit Court in the trial of two jury cases today, and he for that reason requested that this matter be postponed.

Commissioner Osborne: Is he actually engaged in the trial?

Mr. Lloyd: He is actually engaged, yes, sir, engaged all day yesterday and starts in this morning with two additional ones. The engineers of the Electric Company, of the city and the Commission have been holding hearings and I understand that they have not completed their work and it would be merely a duplication of testimony any way. Mr. Carver just in-

formed me that they expected, hoped to finish up in about two weeks.

Commissioner Osborne: I understand they have been holding conferences. It occurred to me if they could condense these conferences perhaps we could get to the finish of this case. I cannot see why they have to be strung along over such a long period of time. We have had two or three adjournments now and it is rather unsatisfactory.

Mr. Carver, what is the situation with regard to these conferences?

Mr. Carver: About as much as I can report now is that we are making progress. I think if we did get together and stay together—my idea is we should get together and stay together until we conclude as far as we can go.

Commissioner Osborne: Why does it take so long; what are you talking about all this time?

Mr. Carver: I do not think there has ever been a case before the Commission that has been any more difficult than this, because it is not the usual thing—

Commissioner Osborne: What is it you are threshing out?

Mr. Carver: We have been threshing out the operating expenses and economies that the company ought to make and should make and could make to cut down the operating expenses and also with respect to the propriety of continuing the steam plant, and the engineer for the municipality not only questions that, but also the expenses in connection with the hydro-electric plant.

Commissioner Osborne: How do you expect to get anywhere on that question, the operation of the steam plant? Won't the Board have to decide that question anyway?

Mr. Carver: Yes, sir, I think they will. We are trying to get the facts together in such shape that the Board could intelligently pass on that. We proceeded to set up the operating expenses, the best results that could be obtained with the operation of the steam plant and the best results that could be obtained by purchasing power from the Millville Manufacturing Company and also the results—

Commissioner Osborne: I know what all the questions are. The point is, I cannot see why it takes you so long to come to the answer. How many more days are you going to need to close this up, clean up your conference?

Mr. Carver: I think our plan is at present to meet—we have a meeting here at Trenton—

Commissioner Osborne: How many more days will it take, actual days—I do not mean how many days if you meet now and again.

Mr. Carver: We are planning to give—I was planning to go down to Philadelphia on Thursday and stay there until we got through.

Commissioner Osborne: Will that meet with your approval?

Mr. Miller: If your Honor please that would be satisfactory to the city if we knew it was going to end.

Commissioner Osborne: This has got to end. I am getting tired of it.

Mr. Miller: I thought the Board would be.

Commissioner Osborne: I am sitting here listening to these hearings at more or less lengthy intervals and by the time I get to the end I will not know what I heard on the first day, will forget all about it. It ought to be closed up any way; there is no excuse for dragging it along this way.

Mr. Miller: That is just the way I feel about it.

Commissioner Osborne: Will your people be ready to go into these conferences and conclude them and end them?

Mr. Lloyd: Yes, sir, I think so.

Commissioner Osborne: They will?

Mr. Lloyd: I think so, yes, sir.

Commissioner Osborne: You appear for Mr. Starr in this matter?

Mr. Lloyd: Yes.

Commissioner Osborne: Suppose we adjourn for two weeks, with the understanding that these conferences are to be concluded in the meantime and the results laid before us at that time and if they are not concluded they may as well be suspended because I want to finish this case.

(Adjourned until Tuesday, May 8th, 1923, at the State House, Trenton, N. J., at 11:00 A. M.)

BOARD OF PUBLIC UTILITY COMMISSIONERS

Trenton, N. J., Tuesday, May 8, 1923.

IN RE INVESTIGATION OF RATES MILLVILLE ELECTRIC LIGHT COMPANY.

Before the following Commissioners:
HARRY V. OSBORNE, Esq., President,
FREDERICK W. GNICHTEL, Esq.

For the Millville Electric Light Co. appears:
LEWIS STARR, Esq.

For the City of Millville appears:
LOUIS H. MILLER, Esq.

Mr. Starr: If the Commission please, I desire to bring to the attention of the Commission a situation which may have the effect of lessening not only the labors of the Commission but avoiding the consumption of any further time in taking testimony. During the adjournment we have had the engineers of the municipality, this Board and the defendant have been in conference with the hope of arriving at some agreement as to the evaluation of the plant and of the general cost of operation, so that the Board would be relieved of determining those matters from the testimony produced, and as I understand it, they have practically agreed upon a reproduction value of the plant of the company as of January, 1923. There is substantially no question, no dispute about that. They have failed to reach any agreement with respect to the overhead which is to be added to that, or as to the cost of operation, the reasonable

cost of operation. Now, our feeling is that regardless of what may have transpired in the past as to the cost of operation, whether or not the steam plant is efficient, whether there are economies that could not have been adopted before, the real and substantial question here is, what is the reasonable cost of operation in the future covering the period of time which will form a basis for the fixing of rates?

Commissioner Osborne: What it should be?

Mr. Starr: What it should be.

Commissioner Osborne: Not what it is if you are operating a plant that is uneconomic.

Mr. Starr: Well, I think with the economies that have been suggested and adopted that there will be no difficulty about establishing the fact that in the future the plant can be economically operated.

Now, it seems that it is almost impossible to determine what the economic cost of operation would be in the future from what has transpired in the past, and the best way to have that matter determined is by way of experiments, so that this Board would have some substantial basis to fix a permanent rate. The main difficulty seems to be that the City is not paying what it should pay with reference to street lighting. The situation with respect to that is this: In 1915 a contract was made for five years covering the cost of street lighting during that period. The contract expired the first of January, 1921. Of course the 1915 contract was based upon prevailing cost prices of labor and material at that time. In 1921 the City invited proposals for the renewal of the contract. The company submitted bids, which were higher,

of course, than they were in the 1915 contract. Without either rejecting or accepting the bid the City has retained the certified check that was furnished with the proposal and has insisted that the company should continue the service and that service has been continued. Of course the company was not inclined to discontinue the service, but the City has refused to pay for the service which has been furnished since 1921 any sum in addition to that which is included in the 1915 contract. There seems to be no question but what the amount which they have paid under the terms of 1915 contract is not sufficient for the service which they have received since 1921. Recently the City has requested the company to furnish additional lights, I think sixty lights.

Mr. Franklin: Thirty more now and thirty last year.

Mr. Starr: Thirty additional lights, and they have taken the attitude that they will not pay for those lights more than what was paid under the 1915 contract. So that is a matter of dispute which seems to me ought to be disposed of by this Board. What we are willing to do is this:—

Commissioner Osborne: Is that dispute due to the fact that they simply will not negotiate or is it due to the fact that you are demanding from them a price which they deem to be in excess of the value of the service?

Mr. Starr: They simply will not negotiate. They simply say they will pay under the 1915 contract, no more, because we consider that is the reasonable value for the service performed. What we are willing to do is this: We are will-

ing to consent to a reduction in the commercial lighting, that is the residential lighting, commercial lighting, and consent that a new schedule be filed and be approved which would practically bring it back to what it was before the recent raise, which amounts to an average of twenty-five per cent. on the present rates which are now being charged.

Commissioner Osborne: An advance of twenty-five per cent.?

Mr. Starr: No, a reduction of twenty-five per cent. on the present rates; take them back to the rates established in 1918. That is the value so far as the commercial lighting is concerned, and it amounts to about thirty-six per cent. reduction on the power lighting, if the City will pay for the period from 1921 to date and continue, the amount which was included in the proposal which was made at the suggestion of the City, or such an amount as the engineers of this Board may determine to be a reasonable value of the service performed since 1921; that rate to continue for such a period of time as the Board may conclude to be sufficient to determine what would be a permanent rate, nine months or a year, whatever may be necessary, so the result of that proposition would be that the commercial rates would be reduced—I have a schedule here; the first block would be thirteen cents under Schedule A, thirty kilowatts or less, thirteen cents net; the second block all over thirty kilowatts, twelve cents net; Schedule B, the first block one hundred kilowatts or less, twelve cents net; the second block all over one hundred kilowatts, eleven cents net; Schedule C, all current used, eighteen cents net; Schedule D, all current used,

twelve cents net; and the power lighting would be, the first two hundred and fifty KW., eight cents and then a gradual decrease until we have twenty thousand, two and a half cents net, which makes an average rate of three and a half cents. The result of that would be—if that schedule is put into effect for nine months or a year as a test period and the City will pay what we say we are entitled to for the street service under the proposal as made in 1921, and if they think that is too high, we are perfectly willing to have this Board, have the Commission, the engineers fix what is a reasonable value for the service performed during that time—so that the result will be that the commercial light would be reduced, as I say, twenty-five per cent., and the power lighting thirty-six per cent., and the City will pay for street lighting what the engineers of this Board will certify is a just and reasonable value of the service performed during that period of time.

We make that proposition to your Honors and we made that proposition to the other side It seems to me that it is made in good faith, for the purpose of arriving at some rational determination of this rather intricate question. It will save the time of the Commission and will then for the next nine months or a year give the Commission, under the inspection of its engineers—the plant will be operated under inspection—an opportunity to determine whether or not it is economically operated, and then having that before the Commission they will be able at the end of that period to determine what will be a just and fair rate to all concerned.

Mr. Miller: If your Honors please, I had not heard of this proposition and would not like

to challenge the good faith of the people who make it. The first thing to be considered, however, is whether this Board would have the power to enter into such an agreement, be a party to it, or give it force by the making of an order. We are before this Board on an inquiry set up by the Board itself, instituted by the Board itself, and the purpose is to determine whether the rates exacted in Millville are just and reasonable. That inquiry has no bearing whatsoever, if your Honors please, touching the rates, fixed by a contract formerly entered into, or that may hereafter be entered into by the City of Millville with respect to street lighting. Of course, your Honors know that the lighting of the streets is done by a contract entered into by the municipality either with a utility or with an individual under the same old law which has been in force since 1893 or 1894 and which limits the contract to five years. Certainly your Honors are familiar with that old statute and it has never been changed. It is the same statute under which the contract of Rob lighted Cape May City. Out of that grew litigation of very great interest, the famous Rob case, when it was held a private contractor entering into such a contract used the power of the City to get into the streets. One of the most important decisions ever rendered. You can see very readily, if your Honors please, that that power being placed with the Board of Commissioners to make such a contract either after bids or privately—such a contract can be made without advertising for bids with a corporation or with an individual—since the power is placed in the Commission I do not suppose they can delegate it to this Board.

Commissioner Osborne: They do not have

to. The State has taken care of that.

Mr. Miller: Have they done that with respect to a contract with a City?

Commissioner Osborne: Why certainly. We are setting aside contracts all the time, because they are discriminatory. I do not see in principle that makes any difference, whether it is an electric light contract or other contract.

Mr. Miller: I think with respect to public street lighting—

Commissioner Osborne: This Act was passed after the Act which you referred to, and supersedes it.

Mr. Miller: Yes, it was passed in 1911.

Commissioner Osborne: This company, as I understand the law—if I am wrong, of course the Courts will correct me—as I understand it, if this company is furnishing light generally, furnishing electricity to the community and also furnishing it to the City under a contract with the City that is discriminatory, that contract can be set aside by this Board, and superseded.

Mr. Miller: The difference is, with respect to a street lighting contract, it is different from any other contract, because you can make it with a party who is not even a resident, who is not a utility.

Commissioner Osborne: That is a different proposition. If you make a lighting contract with an individual or utility not furnishing the rest of the community, then there is no question of discrimination, but where you are making it with a company that is furnishing power and light generally to the community, that com-

pany has no right to discriminate in favor of the City.

Mr. Miller: There may be something in what your Honor says. Of course in this case there is no contract.

Commissioner Osborne: It seems to me it becomes rather an important question.

Mr. Miller: It certainly is. It is one of the most important your Honor ever raised. I see the point of it, that is to say, if we make a contract with this company they must themselves fix a just and reasonable rate, otherwise it would be discriminatory and would exact something from their other consumers to make up something they might lose with the City. That is a new question, not raised on the facts here. We have no contract.

Commissioner Osborne: It seems to me all we have to do in this case is fix a schedule of rates that will give this company a fair return on the character of its investments and that will be fair to the City and to the other consumers.

Mr. Miller: And there is nothing else before this Board.

Commissioner Osborne: I haven't any question about the authority of this Board to do that.

Mr. Miller: But of course your Honors cannot make us take electric light from them.

Commissioner Osborne: You do not have to take your light from them.

Mr. Miller: I think perhaps you could fix a rate—I do not want to say I concede it, but I

think you could fix a rate that they could not overstep in dealing with us.

Commissioner Osborne: We could fix a rate; we could not compel you to use the electricity.

Mr. Miller: I might be glad if you took that step, perhaps. I would like to consult my client. That would relieve us very much, if you could fix not only the private rates, but rates which would bear on their relation to the City, if we would deal with them. I would not say that could not be.

Commissioner Osborne: The only other question would seem to be what that rate should be. As I heard this case, my impression is they would have to give the community, their consumers including the City, the benefit of the advantage which they obtain from the hydro-electric plant, which is an advantageous operation, as I understand it. It is able to purchase a limited quantity of electric power at a very low rate. The utility must give the consumer, must give the public benefit of any advantage it can work out in the operation of its plant. It has a favorable rate through a certain amount of electricity which it purchases, which of course it must pass on to the consumer. That only leaves the question—

Mr. Miller: May I interrupt? The amount they can purchase is not limited in any way. I think that you said they could purchase a limited amount, or some quantity. They can purchase it all if they want to.

Commissioner Osborne: I understood they were limited in amount by the amount which the seller would produce for them.

Mr. Miller: The testimony shows, and I think the fact is, they can buy it all.

Commissioner Osborne: Then the next question is whether they can charge the expense of what is currently, judging by the comparison shown in these exhibits, the expensive operation of this steam plant, to the community, or whether inasmuch as they have elected to put in that expensive apparatus, whether if there is any loss by it, whether they must not bear that loss.

Mr. Miller: I think that is all there is to it.

Mr. Starr: On that point, I think the best criterion of whether it is an expensive plant or can be worked economically would be what appears in the future.

Commissioner Osborne: You would not want to use the past as a basis for prognosis of the future?

Mr. Starr: No, that would not seem to me to be the way to meet it. My suggestion is that we have this tentative rate for a limited period of time as I suggested, so far as commercial lighting is concerned, with the understanding that the City stipulate that they would pay what this Board said is a fair and reasonable rate for street lighting. It seems to me everybody is taken care of.

Mr. Miller: I cannot do that, if your Honor please.

Commissioner Osborne: We have so many cases of the relation between street lighting and other consumption that it ought not to be difficult to reach a conclusion as to what proportion one should bear to the other, because

there are innumerable instances of that with different municipalities throughout the State.

Mr. Miller: If you fix the public rate to the City, that would be what he wants practically, and we do not have to take it if we can do better by dealing with some one else.

Commissioner Osborne: If you elect not to take it, of course they cannot force you to take it; if we fix it and you elect not to take it, then presumably they would have to come in for a readjustment of the rate, or an amended schedule, to take care of the loss which came to them by reason of your failing to take electricity from them. That might incur a loss; I don't know.

Mr. Miller: That is for the future.

Commissioner Osborne: But any rate fixed in the future would have to be based upon what a proper plant should do, not what this plant has done in the past, this steam plant.

Mr. Starr: That is my suggestion and it seems to me—

Mr. Miller: That is quite a little different. His Honor states it in a legal way. You say we do not have to take that current; you fix a rate which they can charge Millville and we do not have to take it, we can contract outside if we want to, then you say if the result is that the company loses what was a reasonably anticipated profit, then they come back and get a new rate; that is what you say.

Commissioner Osborne: Yes, because they are entitled to a fair return on the investment on their property devoted to the public. Whatever the conditions are that produce that return, they are entitled to have it, up to a cer-

tain point where the rate becomes prohibitive, up to the point of saturation.

Mr. Miller: If your Honor please, Mr. Ware, who is the Commissioner in charge of that department, thinks what your Honor states is fair and would be acceptable to the City, that is, we do not have to take this current; that is for the Commission, but the rate is to be fixed by the Board for this public lighting service, which the Board will say is just and reasonable. If we take it everything is all right; if we do not you can come back and get a new rate.

Mr. Starr: No. This suggestion is contingent upon the fact—

Mr. Miller: I cannot accept it in that light.

Commissioner Osborne: Upon their accepting it?

Mr. Starr: Yes. Because we are predicating our commercial rate on the idea there will be a fifty per cent. increase in 1923 over 1922; that is, of course, an approximation. We make our rates for commercial lighting based upon the fact that we will have for street lighting what your Honors feel will be a fair and reasonable return.

Commissioner Osborne: Judge Starr, do you concede that it would be possible for this Board to force the City to accept that rate?

Mr. Starr: Not a bit.

Commissioner Osborne: Then why couldn't it be adjusted in this way; let the Board take a tentative rate, experimental rate if you chose to call it that, based upon the theory that the City will accept the rate as promulgated by the Board. If the City refuses to accept that rate,

then let the rate, if necessary, be readjusted, leaving out of consideration the City as a customer, on the basis of the rest of the community using it for house lighting and commercial purposes; then let that rate be filed.

Mr. Miller: I don't know that I quite comprehend that.

Mr. Starr: He is not going to drive the City to enter into a contract.

Commissioner Osborne: We cannot. My thought is simply this: That this matter be submitted to the Board to fix a rate on the assumption that the City will use electricity on the basis fixed by the Board. If that rate is fixed and submitted and the City determines it will not use electricity at that rate, it will get it elsewhere—where I do not know—then the question arises whether that schedule, having been fixed on the basis of the City as a large consumer, whether that rate will, without the City as such consumer—whether the rest of the consumers will produce a fair return on your investment. If it will not then you would have to file a new rate schedule, leaving the City out of consideration, another rate schedule which you could file.

Mr. Starr: That of course would necessitate what I am trying to avoid.

Commissioner Osborne: Raising the rates to the rest of the consumers?

Mr. Starr: No, the production of a lot of testimony and necessitate having your Honors pass upon the rate. We propose to make the rate in accordance with the schedules as they were before the raise in 1921.

Commissioner Osborne: They decline to accept that, as I understand it.

Mr. Miller: I cannot accept the conditions, it would not be legal, if your Honors please, even if the Commissioners wanted to do it. I should not think they could do it that way.

Commissioner Osborne: They can submit a rate; if it has our approval and the rate to you is satisfactory, what is the objection?

Mr. Miller: We will take the current, that is right.

Commissioner Osborne: That is what they propose to do.

Mr. Starr: It seems to me, if Mr. Miller feels embarrassed now because he has not authority to represent the Commission, it seems to me that proposition should be made to the Commission of the City to ascertain whether they are willing to accept the proposition which we make.

Mr. Miller: There is a big difference in principle. These people cannot delegate their authority, these Commissioners. They have to make a contract under the law; they cannot throw the responsibility on this Board.

Mr. Starr: Can't they make a contract to be what this Board says is a reasonable rate?

Mr. Miller: They can if they want to, but they cannot bind themselves by some such condition as might be imposed here. That would be a delegation of their power.

Commissioner Osborne: Why do you insist they must make a contract? If the rate is fixed, why can't they take electricity at that rate and

pay for it? You are not under contract now. If you say they must make a contract why didn't you make it three years ago? You have been running along without it for two years and you are still out of jail.

Mr. Miller: If your Honor please, personally I do not like the situation, since you bring it up. I think myself it is the most hazardous thing the Commission ever entered into. I do not think Mr. Franklin likes it. He put in bills under oath that are certainly in question. If you had Justice Black get real angry about it, he could make trouble with Franklin and might make trouble with us. Certainly Franklin has sworn to bills for two years on the basis of a mere estimate and some conclusion of his own, not thoroughly grounded on any facts.

Commissioner Osborne: What do you want done?

Mr. Miller: I want done just what your Honor proposes, otherwise we will have to go on. I will not enter into a stipulation that the City will take current at the price your Honor will fix, because I feel I cannot do it, but I do feel if your Honor fixes a temporary rate based on the condition that the Millville Electric Light Company shall have the benefit of the anticipated revenue for furnishing current at a rate that you are going to fix and then they do not get that because the City will not take the current, then we come back here, of course your Honors would fix another rate.

Commissioner Osborne: You have not been asked—there has not been suggested that you agree in advance to accept the rates fixed by the Board.

Mr. Miller: You have not, but Judge Starr does.

Commissioner Osborne: I have suggested the alternative, in order to meet the situation that Judge Starr might find himself in upon your refusal, that is to say, a tentative schedule can be worked out and submitted and should you decline to accept it, to take electricity on that basis, they shall have leave to withdraw that tentative schedule and file a new one, without you.

Mr. Starr: That leaves up in the air, if the Court please, the question of the compensation which the company is to receive for street lighting.

Commissioner Osborne: If they decline to take electricity—

Mr. Starr: They have already taken it for two years.

Commissioner Osborne: You are entitled to sue them for that and get what it is reasonably worth.

Mr. Miller: That is what we said.

Mr. Starr: This proposition is based upon the idea we will avoid a suit and have the Board fix what they should have paid for the two years.

Mr. Miller: I cannot do that. That is for the Court.

Commissioner Osborne: If we fix such a rate, fix a rate now, for instance, that is acceptable to them now, presumably it will be acceptable for settling up past claims.

Mr. Miller: No, sir. I would not concede

that, Judge. They will have to sue us for that back rate.

Mr. Starr: It seems to me if that is the attitude of the City there is nothing else for us to do but go on and conclude our proof. That is what I wanted to avoid. It seems to me this proposition is an eminently fair one, the commercial rates are put back as they were two years ago, three years ago.

Commissioner Osborne: Do you think this Board has power to fix a rate now, an expost facto rate?

Mr. Starr: No. This is a matter of agreement between the company and the City.

Commissioner Osborne: So that is out of the question. You will have to sue them for that, if you cannot come to an agreement.

Mr. Starr: I want to avoid that. I want to avoid further litigation before this Board and elsewhere and have the Board fix what would have been a fair rate for them to pay during the two years and they agree to pay it. In consideration of that we will continue to furnish current or service at the rate which the Board may fix for the future, and reduce the commercial rate in accordance with this schedule.

Commissioner Osborne: What is your objection to the schedule which they now propose?

Mr. Miller: I have not examined them if your Honor please.

Commissioner Osborne: Let your experts examine them.

Mr. Miller: I do not think the Board is bound by this offer, this schedule.

Commissioner Osborne: No, we are not bound by it.

Mr. Miller: I would like to have the people of Millville know your Honors fixed a just and reasonable rate, even if you adopt this schedule.

Commissioner Osborne: We would not make an order on it until we had examined it and satisfied ourselves it was proper.

Mr. Miller: That is what we want in the first place. In the second place we are here because this Board said we are going to fix a just and reasonable rate in Millville and the people of Millville are entitled to have a just and reasonable rate fixed by this Board. That is all we will get. I do not think the Board will directly or indirectly exact, and I know your Honor will not exact that we pay some disputed debt, that the City of Millville, a municipal corporation, pay some disputed back debt in order that we may have a reasonable rate fixed here.

Commissioner Osborne: We just indicated we have no power to do that.

Mr. Miller: This schedule. I really do not know anything about it. I would rather the Board—of course if you have all the facts to fix a rate—take this for some basis, and if you want the opinion of Professor Temple I can get that for you in a moment.

(Informal discussion.)

Mr. Miller: Judge Osborne, Professor Temple says he thinks this rate is too high. I adhere to my position that the rate to be fixed must be a just and reasonable rate determined by this Board, whether it is the one now offered or a higher one or a lower one, but the Profes-

sor's opinion is it is too high. I simply state that.

Commissioner Osborne: As to the whole schedule or merely as to the proportion that the City pays?

Mr. Temple: Your Honor, it involves a consideration of the rate structure as well as the top rates, but as applying step for step it is around half way down to where it should go from where it now is, for certain of the schedules. It is very much too complicated to try to complete the digest particularly for the record, at this time. But with the property operating anywhere near the economies which it is possible for it to attain—it has made a great number of improvements in its operation since these hearings began, but should certain additional ones, just as easy to make as those they have made here, be made, and reasonable economies applied, there is money in the business there at rates twenty to twenty-five per cent. below those now submitted, which I do not see to be twenty-five per cent. from the present rates, as stated. For instance, the top rate at the present time is sixteen cents and the rate corresponding to that as proposed is thirteen cents, or three in sixteenths. I have not had any of the charts which would be needed to analyze that rate structure and see whether that would result in a grand total of twenty-five per cent. I would not say it would not and I would not say it will.

Commissioner Osborne: Judge Starr, pardon me just a moment, did you say this proposed schedule put the rates back where they were?

Mr. Starr: Substantially. I understand

from Mr. Franklin there is very little difference between the present suggested schedule and the one in existence before the rate was raised in 1921.

Mr. Temple: Will your Honor permit me to show you just what they were before?

(Informal discussion.)

Commissioner Osborne: You gentlemen both agree, as I understand it, you both agree that this Board shall now fix a rate with the option on the part of Millville to either reject or accept the lighting schedule; then if that rate which shall be tentatively fixed—if Millville rejects that, then we fix a new schedule leaving Millville out of consideration as a customer. You merely offer this as a suggestion.

Mr. Starr: After talking to Mr. Franklin, I am willing to recede from the suggestion I made originally, as a condition precedent to having this proposition accepted that the past service from the City will be absolutely eliminated. We will take our chance, of course, without prejudice, we will take our chance on a law suit with reference to that. We are perfectly willing to have the Board, if this schedule of commercial lighting is adopted, fix what the City shall pay for street lighting from now on.

Commissioner Osborne: We will fix the whole schedule; we will not be bound by your suggested schedule.

Mr. Starr: It seems to me our suggestion is conditioned upon the fact that we are willing to make this concession without putting any further testimony in; we want to avoid that, if possible. I do not think there is any question that would be a fair and reasonable rate under

the circumstances.

Commissioner Osborne: If you will now come in, say you desire this Board to fix a rate schedule including the City, we will attempt to do that. Then if the City does not accept that rate schedule, that rate schedule will not be forced upon you, but a new one will be formulated without the City as a customer, because the rates undoubtedly to the rest of the community will be higher—this rate originally suggested with the City in probably would not be fair to you, and we will formulate a new one, and then we will put that into effect and see what happens in the course of a year. If it does not produce enough money to pay you a fair return, then a new schedule can be formulated and sufficient will be added to it to make up your loss.

Mr. Starr: I think that is perfectly satisfactory, if Mr. Franklin is willing to have that done upon the record as now made.

Mr. Franklin: That is all right.

Mr. Starr: We are agreeable to that, without taking any further testimony.

Mr. Miller: I do not agree to it because it is not necessary. It is perfectly fair, it could not be fairer than that.

Commissioner Osborne: Then you have no objection.

Mr. Miller: I could not object to that.

Commissioner Osborne: Have we in the estimation of you gentlemen, sufficient testimony upon which to formulate a schedule?

Mr. Miller: I would like to have an oppor-

tunity of suggesting a rate.

Commissioner Osborne: They are going to suggest this rate and you can suggest a rate.

Mr. Miller: Of course, in the end the engineers will fix the rate and the Board. How much time do you think we ought to have to put in a schedule?

Commissioner Osborne: How much time do you need?

Mr. Miller: We want ten days, is that all right?

Commissioner Osborne: Yes.

Mr. Starrff What is the suggestion?

Commissioner Osborne: He wants ten days to file a suggested schedule for the consideration of the Board.

Mr. Starr: We probably will be obliged to put some formal proof in in order that the record may be complete.

Commissioner Osborne: Just to complete the information?

Mr. Starr: I supposed there would be no controversy about the facts, that our proposed schedule would be satisfactory to these gentlemen, but apparently we are not able to do that.

Commissioner Osborne: When they analyze it maybe they will agree to it.

Mr. Temple: We have also some additional proof which we would like to add, is that all right, your Honor?

Mr. Miller: No, I have no additional proof at this time. I want to close this case.

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Commissioner Osborne: Is it in exhibit form?

Mr. Temple: Part of it is.

Mr. Miller: All we do is put it in exhibit form and put it in in ten days.

Commissioner Osborne: Give a copy to the other side.

Mr. Miller: Yes, I will do that. The understanding then, if your Honor please, is the City of Millville will send up a schedule, proposed schedule of rates which will form part of the record.

Commissioner Osborne: And serve a copy on the other side.

Mr. Starr: I don't know where we are going.

Commissioner Osborne: It is just a suggestion to the Commission that does not bind anyone.

Mr. Starr: We have not as yet put in our valuation, our suggestion as to value.

Commissioner Osborne: I want you to put in anything we may need in order to formulate a rate.

Leo Loeb, recalled on behalf of Millville Electric Company.

DIRECT EXAMINATION

By Mr. Starr:

Q. Mr. Loeb, you have already been examined as a witness in this case and I have a few other questions to ask. There has been some suggestion in the record that there was a decided falling off in business co-incident with the enforcement of the present rates. Have you made an analysis of the

sales of all classes of business?

A. I have, sir.

Q. Have you a chart showing the results of such analysis?

A. Yes, sir.

Q. Will you produce it please?

A. I present in evidence a chart showing the division of kilowatt hour sales by classes of customers from 1911 to 1922. The 1922 record is based on ten months estimate, the actual results having been a slightly lesser amount.

Mr. Starr: I offer that in evidence.

(Chart showing division of kilowatt hour sales by classes of customers from 1911 to 1922 received and marked Exhibit R-6.)

Witness: In this chart by years has been shown the amount of energy metered to the different classes of customers. The municipal street lighting service is the lower block, and as the Commissioner can see, there is a normal increase corresponding to the additional lamps in the City. Above that is plotted the commercial and residential lighting increase and that is a very marked increase, particularly in the year 1920 and in the year 1922. The entire area above that corresponds to the commercial power growth and for the three years, 1920, 1921 and 1922, we have shown by the shaded area the amount that the water company takes out, so that what is left at the top is that sold to customers other than the water company under the power schedule. That does show a falling off from the industrial conditions, due to industrial conditions that obtained subsequent to 1920, but that again is on the upward trend for the year 1922. I might say for the three months to date for which we have the evidence

there is an increase month by month over 1922.

Q. (By Commissioner Osborne.) This area indicated, the highest block is comparable with this (indicating)?

A. With this difference, that we do not know how much water company power there is in that; there is some. There are no records that I could unearth to determine that, but I think it is probably true that the water company's consumption was not as great in subsequent years, from what I have been able to find about the history of the various pumps. That is merely a conjecture.

Q. (By Commissioner Osborne.) The falling off then is noted in the block, the top block, over the year 1920?

A. Yes,sir.

Q. A drop in 1921?

A. Yes, sir.

Q. And a gradual increase in 1922?

A. Yes. Except for the falling off following the industrial depression there is an increase in consumption on all classes of customers. As I say the record seems to show that continues for the three months.

Q. (By Commissioner Gnichtel.) 1919 and 1920 show an increase.

A. The 1920 power is this total height and the water company used that much; that is the total power (indicating). There is some, we have no record, to establish how much it is. It might be a very small amount.

Q. There is a very marked increase in both the water and the other.

A. That is the total power. What I wanted to bring out was, leaving out the water company, there was a reduction due to the depression in industrial condtions in Millville, and that is gradually picking up, so the evidence here submitted shows that all

classes of customers are on an increase even through the period of this higher rate, and it also gives the Commission evidence in a graphic form to form conclusions about the allocation of charges.

Q. Have you prepared a chart showing the over all results of the operation of the Electric Light Company from 1917 to 1922?

A. Yes, sir.

Q. Produce it, please, and explain what it shows.

A. Yes, sir. Chart showing earnings and expenses for the period 1917 to 1922 classified by the accounts of this Board.

(Chart showing earnings and expenses for 1917 to 1922, received and marked Exhibit R-7.)

Q. Does that 1922 portion of the account cover the entire year or only a certain portion of it?

A. The chart was prepared having at the time information available for ten months with two months estimated. The last two months' actual performance did not quite agree with our forecast but the chart has not been altered. However, another exhibit will be offered to bring that correctly up to date.

Q. Will you produce that please and explain what it shows?

A. If you will permit, Judge Starr, may I outline in general what this chart shows first?

Q. Yes.

A. For any one year, such as 1920, I think that is clear, the portion of the block on the left hand side shows the revenue of the company by the various classes of business. In 1920, the first block, municipal lighting, accounts 301 and 302, the next block above that, commercial lighting, account 305; above that commercial power, and above that the revenue obtained from the sale of steam to the gas

company. On the right hand side the various blocks indicate the subdivision of the expenses of the company. The lowest block, No. 1, production expenses from all sources, which we have already analyzed by detail in previous exhibits; the block above that distribution expenses, above that utilization; above that grouped together, commercial, new business and general, because the new business and commercial are so very small they would hardly show on a chart alone; above that taxes, interest and the amortization as shown by the books, representing the difference between a fixed percentage less the true maintenance of the company.

Now, for 1922 the amounts actually billed to the various customers are represented graphically and they are approximately correct. In 1922 adjusted we have given effect to all the economy possible as per my previous testimony and we have also increased the three hundred and thirteen, called revenue from sale of steam to the gas company, considerably; after a later analysis it develops that that block was somewhat too large and a somewhat lower figure arises. However, that is shown correctly in the table which I have prepared and which I should like to offer in evidence at this time.

Q. That covers the same subject matter except is has the entire year of 1922 instead of ten months?

A. Yes, sir. And it has a column showing what the 1922 results might have been had all the economies which we feel possible been accomplished, and furthermore what the 1922 results might have been had the company purchased all the requirements from the Millville Manufacturing Company not on the existing rate, but on the rate which the Millville Manufacturing Company has recently proposed to the company, a somewhat lower rate.

Q. (By Commissioner Osborne.) A somewhat lower rate?

A. A lower rate than the present rate. I should like to offer in evidence a tabulation showing for the period 1919 to 1922 the operating statistics of the Millville Electric Light Company as taken from the company's records and adjusted in 1922 for possible economies and for the change in revenue from the gas company.

Q. That shows the relative cost of production of the different plants?

A. Yes, it gives in deail the cost of production of the hydro-electric plant, of the steam plant, and the cost of purchased energy.

Commissioner Osborne: What is the difference? Will you refresh my recollection? I have been looking for an exhibit showing the relative cost of producing electricity in these three plants.

Mr. Temple: Exhibit P-12.

Witness: You mean as to total dollars or for kilowatt hours? Such an exhibit has not been offered by us, if the Commission please.

Q. (By Commissioner Gnichtel.) What are these (indicating)?

A. Those are classification account numbers.

Q. What are the Roman numerals?

A. It just happens to be that is a different classification, as far as the Commission is concerned; the Roman is usually a block classification in which there are subdivisions, but those tie in exactly with the classification of accounts as used by this Commission.

(Statement showing operating statistics, 1919 to 1922, and adjustments in 1922, results for possible economies, and division of charges for steam to gas company and for purchased power received and marked Exhibit R-8.)

Q. (By Commissioner Osborne.) This exhibit which you are now offering, which is R-8, will that meet Exhibit P-12? That is to say, the real situation taken from your books as to the cost per kilowatt hour?

A. Yes, divided by the statistical information at the top. We have set forth the statistical information, the kilowatt hours sold, used by the company, purchased, generated and total. Information relative to the number of customers at the end of each period, the number of arcs, incandescent lamps and the total lamps, so there is a complete digest of the necessary statistical information to utilize this information as the Board's engineers may see fit. Of course, the figures of 1919, 1920, 1921 and 1922 actually are as per the company's books or as per the reports which they have filed with this Commission. The last two columns on this table show what in our judgment are the operating expenses that would have accrued, principally in changes in production at the steam plant had the economies been effected, such as placing new valves on the engine, the new exciter and new feed pump and the synchronizing of the hydro-electric plant and the steam electric plant.

Q. (By Commissioner Osborne.) These are some of the things suggested by Mr. Temple?

A. Yes, sir; well, they were in a large part suggested by us prior to that, to the company and they have been carried out.

Q. They have been carried out?

A. Some of them. We have always maintained the two plants would operate if synchronized and they have operated in synchronism, so that was one economy that was accomplished, on its way toward accomplishment before the hearings were had. The others were suggestions that the company has car-

ried out from time to time made by us initially in most every case.

The results in the next to the last column show the company would have had available total operating revenues less total expenses, including amortization and taxes, $29,031, from 1922 operation.

Q. (By Commissioner Osborne.) Available for dividends?

A. Available for return on property, Federal taxes and surplus, whatever they chose to make; in other words, it is after taxes but before interest in this particular case. The actual figure available as shown by their books is $16,098. In part, that difference of thirteen thousand dollars is due to the increased billing to the gas company which we have estimated to be about eight-three hundred dollars in excess of the amount they did bill the gas company and the balance is due to economies in the production of electricity. The final column on this table shows what the results would have been had the company shut down its steam plant, burned no coal, furnished no steam to the gas company, but purchased all its requirements from the Millville Manufacturing Company as has been suggested at some prior time in this case. That shows that the amount available above operating expenses, taxes and amortization would have been $24,512. That surplus assumes that the hydro-electric plant would have been operated at its full efficiency due to paralleling, synchronizing the Millville Manufacturing Company instead of with the steam plant.

Q. (By Commissioner Osborne.) This next to the last column, that shows a balance of twenty-nine thousand dollars, is an estimate?

A. Yes, surely, but it is an estimate based on 1922 performance and I think in the future—

Q. When did these improvements begin that you speak of that changed the condition?

A. I believe off hand that the earliest one took place in October, 1922.

Q. 1922?

A. Yes, in October.

Q. So you attribute the red figures in 1920 and the figures in 1921 to the fact that these economies, changes and improvements had not at that time been in operation?

A. Not entirely. In 1920 the company had extraordinary high priced coal to contend with. I believe the average figure was in excess of twelve dollars a ton. It was some very high figure, so in part it is due to that.

Q. The jump begins in 1922 when you begin to put your plant in proper condition.

A. Yes, sir.

Q. When was the steam plant put in?

A. The exact date it was put in operation was some time in 1919.

Q. 1919?

A. Yes, sir.

Q. Now your proposition is, with these improvements, changes and economies, bringing about a greater efficiency, you can produce a better result by continuing this steam plant than if you abandoned the steam plant and relied entirely upon the hydro-electric and purchased power.

A. In 1922 the result would have been better, and in succeeding years as the output of the steam plant increased through what we hope to be the continual growth of this company, the economy would still be greater.

Q. Is the hydro-electric plant of sufficient capacity to take care of the needs of the company?

A. No, sir. Of course, at night time during a certain portion of the year it takes care very largely of the requirements of the company, but at all times, as far as I know—there may be certain exceptions

on Sundays or holidays—the steam plant or the other source of power, the Millville Manufacturing Company, must be relied upon to supply various amounts of energy.

Q. Do you think it would be more economical to continue this steam plant than to buy your power at the new rate?

A. This set proves that it would be more economical in 1922, and on the theory that the output of the steam plant will increase—

Q. How about 1923? That is behind you now.

A. Three months. In general, as the steam plant increases its output it burns more coal but certain of its other operating expenses increase to an extent but not nearly in proportion, so the greater output makes that margin of cost per kilowatt increase as the output continues. Of course you finally reach a point where the engine is no longer large enough to take care of the situation and then you must introduce a new generating unit in this system somewhere or arrange with the Millville Manufacturing Company to purchase your excess requirements. That is a matter of economics for the future to determine.

Q. (By Mr. Starr.) Do you have knowledge of the market conditions for power plant equipment during the years 1919 and 1920 when this plant was installed?

A. Yes, sir, I was constructing power plants.

Q. What do you know about the time required for delivery by manufacturers of equipment of the same nature?

A. Turbines and boilers were particularly difficult to get in that period and in certain instances two years elapsed from the time of the placing of orders until the equipment could be delivered.

Q. Have you made an estimate of the probable cost of a modern turbine plant of six hundred KW.

capacity in 1919, 1920?

A. Yes, sir.

Q. What do you estimate such a plant would have cost, assuming delivery could have been made within a reasonable period?

A. Based upon prices obtaining in the latter part of 1922 when I made that estimate, the price would have been one hundred and forty-nine thousand dollars to have had a plant with a modern unit. There has been a considerable increase in certain items of power plant equipment since that time, so that would be the minimum figure.

Q. (By Commissioner Osborne.) What did this plant cost, do you know?

A. No, sir, I do not know. There has been an exhibit submitted I believe, that shows the book figures, the records are clear on that, because the classification of accounts was in effect at that time.

Q. Wouldn't it have been a considerable saving if this turbine was put in and this plant was junked?

A. There would be a very slight saving in coal consumption at the present time, but very slight indeed, because a turbine put in with an eye for service two or three or four years in the future would be larger than the present requirements and would be working at a lower point of load than this plant. I offered an exhibit to show how little this engine has to do certain hours of the day, because the load is primarily a lighting load and the hydro plant has capacity to carry most of it. So I cannot conceive of a modern machine earning its fixed charges with the present load at Millville. As the load increases that situation will change. In our own operation we find the small units—

Q. (By Mr. Starr.) This figure of one hundred and forty-nine thousand dollars, that merely covers the power plant, does it not?

A. Yes, the power plant only, the steam power plant equipment.

Q. Not the generators? Including the generators?

A. At the steam plant, yes, sir; the steam plant equipment.

A. At the steam plant?

A. At the steam plant only.

Q. Have you prepared a statement or tabulation which develops the unit costs of production?

A. Yes, sir. This is probably what the Commission was inquiring about a while ago. A comparison of output, sales and production costs and unit costs for the year 1921 and 1922.

(Comparison of output sales and production costs and unit costs, 1921 and 1922, received and marked Exhibit R-9.)

Witness: Again this exhibit was prepared on a ten months basis and I have accordingly worked up a slight revision applying to the last column of that table. This table shows for the years 1921 and 1922 the statistical information of kilowatt hours generated and sold and the total cost of production in one item at the hydro station, purchased energy from the Millville Manufacturing Company, steam generation, the credit, Gas Department sales of steam. the net cost of steam, and the total net cost of production; that followed in turn by the cost per kilowatt hour of each of those items. The corrected figures for 1922 based on twelve months and not ten months are as follows: Kilowatt hours generated at the hydro plant, 577,890; kilowatt hours purchased, 258,318; kilowatt hours generated at the steam plant, 1,519,500; total kilowatt hours produced, 2,355,706. Kilowatt hours sold, 1,530,047. Cost of hydro

production, $9,081; cost of purchased energy, $7,900; cost of steam generation, gross, $67,518. The net cost of steam generation after deducting what the company actually charged the Gas Company, $37,152. Total net cost of production, $54,133.

Q. (By Commissioner Osborne.) You skipped one thing there, this credit, Gas Department.

A. I beg your pardon, $30,366. That would be the third to the last item. I must have skipped credit steam to the Gas Department, $30,366. Cost per kilowatt hour, hydro plant, in dollars, .0157.

Q. (By Commissioner Osborne.) The total net cost of production?

A. $54,133. Cost per kilowatt hour at the hydro plant in dollars, .0157; cost per kilowatt hour purchased, .0306; cost per kilowatt hour, steam, gross, .0444; cost per kilowatt hour, steam, net, .0244, and the net cost per kilowatt hour produced from all sources, .0230. To reduce that to a basis of sales, the last item—

Q. You have skipped something again.

A. No, I have one more item to insert. The net cost of production per kilowatt hour sold after deducting company uses and losses is .0353. Those were the actual results in 1922, during which period we did not have very much effect from the economy to be produced.

Q. This was 1922 corrected.

A. The first is ten months, two estimated and the other is twelve months actual record.

Q. The first is based on ten months of operation?

A. Yes, sir. The cost per kilowatt hour was changed very slightly, but the relation of purchased, hydro and steam has changed somewhat in the last two months of the year from what they had been in the first ten months.

Q. What do you mean by the difference be-

tween gross and net?

A. The gross is the actual dollars to produce steam and kilowatt hours at the steam plant. The net are those actual dollars after subtracting there from the amount that was billed to the Cumberland County Gas Company for coal and labor and their share of the operating expenses at that plant. There is no theoretical way or actual way other than that that I know of to allocate those. In one case you have a figure that is not cost per kilowatt hour at all because you made steam and not kilowatt hours.

Q. Is that steam a by-product?

A. No, a high pressure steam that goes to the Gas Company through a separate pipe, but made with the same boilers as the steam that goes to the engine.

Q. How can you tell what to allocate to one operation and what to the other?

A. The two sources are metered, each source goes through a meter and the total water sent to the boilers goes through a meter, which is a check against those two and the company is able to watch the accuracy of the meter because they have two to check against one. It is allocated as nearly as it can be from actual results.

Q. Then would you say this cost per kilowatt hour, steam, net, was the true actual cost of the production of that power?

A. Not exactly, because you are subtracting from the production cost a revenue and you have to go into the details of how that revenue was made up to see whether it includes things other than production cost. In going into it I find on the basis they make the charges it does not include much besides actual production cost, so this figure comes very near to being the true net. Had we used in that place the figure we suggest to bill to the Gas Company, which includes a return on the facilities and

a portion of the general expenses, this would not have been the correct figure, it would have been lower than this, but to my mind this represents pretty close the net cost. Of course if you had not had the steam sales to the Gas Company the net to the electric would have been higher, because they would have had to take care of some part of the firemen's labor and other matters spread over the kilowatt hours, so such joint operation should produce economy.

Q. If this steam plant did not furnish steam for the Gas Company this net would be larger?

A. This net would be larger because almost exactly the same amount of labor would be required. They would burn less coal, of course, because they would not make as much steam, but the maintenance and other supplies would be substantially the same and the labor would be almost exactly the same.

Q. According to this you can generate it in the steam plant cheaper than you can purchase it for the benefit of the customers.

A. That does not necessarily follow, although that, of course, is proven exactly by the later figures, because in this particular case this is the cost per kilowatt hour generated and the steam plant has auxiliaries to take care of. But the purchased power has in turn losses. You have to take a corrected figure for both cases to get the true comparison.

Q. What is the true situation?

A. The true situation is shown in the dollars column here.

Q. We are interested in determining whether it would be more economical and advantageous, economical for the company and advantageous to the consumers to junk this steam plant and buy all your current.

A. At the rate offered, the best rate offered by the Millville Manufacturing Company, there is no

question in my mind but what the Company should go on operating the steam plant and these two figures here of total dollars proves that. The per kilowatt hour basis would not prove it.

Q. When you say that you are referring to R-8?

A. Yes, sir.

Q. The totals on the last two columns of R-8.

A. Yes, one of which is the best performance the steam plant produced and the other is the best performance with purchased energy at the rate made. If a very much lower rate was made, that situation might be changed. It is the best information we have as to the best rate for purchased energy.

Q. This gas plant operation, that is another company, isn't it?

A. Yes, sir.

Q. It gets its steam for power purposes from the Electric Company.

A. And for gas making purposes.

Q. It does not operate its own boiler plant?

A. It does not operate its own boiler plant, no, sir.

Q. Is there considered to be any advantage to the Gas Company in that contract?

A. That is something for the company to determine. I did not know that it was in our province to take up the Gas Company's operation.

Q. It is not, except as it related to this in this way: I understand the same people control both these companies.

A. Yes, sir.

Q. If this is an advantageous thing for the Gas Company—it might be—I do not say it is so—but it might be that they would be perfectly willing to operate a plant by the Electric Company at a considerable disadvantage or even a loss in order to advantage the Gas Company.

A. Yes, but I have not taken that standpoint on the situation. In this column we had increased the revenue from the sale of steam from that actually charged of $30,366 to $38,740, which the company should charge to make this a profitable sale of steam to them and thereby not penalize the electric customers. We have made such an adjustment in those two columns.

Q. You consider then the fact they had the Gas Company as a customer an advantage.

A. If the Gas Company is able to pay this thirty-eight thousand dollar bill.

Q. Isn't it paying?

A. It paid a lesser bill last year.

Q. Isn't it paying the value of the steam that is being generated for its benefit? Isn't it paying a fair amount for the steam which it is getting?

A. It did not pay a fair amount in 1922, based on the cost of the service, but from their own standpoint as to the value of the service I cannot testify.

Q. Is it paying a fair amount now in 1923?

A. I do not know whether the company has followed our suggestions as to this particular method of billing or not.

Q. If it is not paying a fair amount, doesn't that fact reflect itself in the cost of operation?

A. It need not so reflect itself.

Q. And so is passed on to the consumers of the Electric Company.

A. It need not so reflect itself before this Commission, if they will agree that the figure which we have worked up in all good faith of thirty-eight thousand dollars is the right amount that the Electric Company should bill to the Gas Company. That is for your engineers to check.

Q. In other words you tell us what they should bill?

A. Yes.

Q. Regardless of what they do bill. If they do not bill it that is their loss.

A. Exactly.

Q. But that fact should not reflect itself in the rate.

A. Exactly; and that increase is twenty-eight per cent. over what they did pay.

Q. Have you given us the data upon which to make the necessary calculations?

A. In the conferences in which this Commission was represented by Mr. Carver, those matters were gone into in detail and he has the supporting data.

Commissioner Osborne: That, in order to be used by us, would have to be offered in evidence in the case, at least sufficient data, otherwise, one side or the other side could say that we had used evidence as a basis for an opinion that was not in the record. That has happened.

Mr. Miller: If your Honor please, a report could be prepared by Mr. Carver and put in. He has been sworn, and I do not see any objection to that.

Commissioner Osborne: Perhaps this witness could submit it in the form of an exhibit showing what they should charge in order to give the consumers of the Electric Company the proper benefit from the operation of the steam plant, furnishing steam to the Gas Company.

Witness: For the year 1922 such a report can be submitted.

Commissioner Osborne: They will furnish such an exhibit, now offer to furnish such an exhibit showing what that credit should be in order that the Electric Company's customers may get a proper credit. Whether they get it or not is another consideration.

Mr. Miller: Cannot Mr. Carver submit his report; he has been sworn.

Commissioner Osborne: How about that; both sides consent to that?

Mr. Miller: Do you object to that, Judge Starr? Mr. Carver presenting a report on these matters these gentlemen have agreed on?

Mr. Starr: Any information that was furnished by Mr. Loeb to Mr. Carver, yes.

Mr. Miller: Then we agree on that; Mr. Carver may present such a report.

Commissioner Osborne: That is merely to keep the record straight.

Mr. Starr: Yes, I understand that.

Mr. Miller: As presented at the conference of the three engineers and agreed to by Mr. Loeb.

Commissioner Osborne: We will have the benefit of Mr. Carver's report. If we did not find any matter we wanted to use in the record we would have to call another hearing.

Mr. Starr: We have no objection to anything that Mr. Loeb furnished to Mr. Carver going in, not the slightest.

Mr. Miller: Or what Mr. Loeb agreed to.

Commissioner Osborne: Their suggestion is a little broader.

Mr. Starr: It seems to me that should be limited to information furnished by Mr. Loeb and information to which he agreed.

Mr. Miller: That is it.

Witness: We came to no agreement on that

matter. We merely submitted our information and no one else had anything to say about it. We stand in the position of being the only ones who submitted any figures on that particular thing.

Q. (By Commissioner Osborne.) You will furnish us with those figures?

A. Very gladly, sir.

Q. (By Mr. Starr.) What have you to say about the present condition of the efficiency of the steam plant?

A. The Commission recalls the engine was thoroughly inspected by the Chief Engineer of the company that today builds those engines and he made certain recommendations as to what should be done physically to the engine instead of to the plant as a whole.

Q. (By Commissioner Osborne.) Was that before or after the last breakdown?

A. That was before; that was before any breakdown.

Commissioner Osborne: I understand since the last hearing you had another accident.

Mr. Starr: Yes, there was an accident there.

Commissioner Osborne: What number was that?

Mr. Starr: I do not know.

I have here a report of the Providence Engineering Company, engineers, under date of November 3rd, 4th and 5th, with reference to the result of their inspection of the steam plant.

Commissioner Osborne: Did they sell the company this engine?

Mr. Starr: I don't know whether it was sold by them. It was one of their engines.

Commissioner Osborne: It might make a difference if they were sustaining something they sold to the company.

Mr. Starr: No, it was not sold by them. It was a Rice & Seargent Corliss engine. It is not proper evidence, but it is a report under oath.

Mr. Miller: Don't you think, if your Honor please, we might have the question answered. The question was, what have you to say as to the efficiency of the plant. Let the gentleman answer it.

Mr. Starr: He started to answer the question and I interpolated the suggestion that we have an affidavit or report and I want to offer that in evidence.

Mr. Miller: We might want this too, but I should think we ought to have his views, unless you withdraw the question, his views about the efficiency of the plant.

Mr. Starr: I am going to ask that.

Mr. Miller: At present I object to these other documents.

Commissioner Osborne: I think the objection now is that you have one question unanswered and you interrupted the proceeding by asking another question, without the first one being finished.

Q. (By Mr. Starr.) Proceed, Mr. Loeb.

A. The company authorized these changes in the engine which had a two-fold purpose, one to better the water rate and thereby burn less coal to make the required kilowatt hours, and second, to make the engine safer from the governing standpoint. Those repairs have been made. In addition, the company is making changes which we, as en-

gineers, have called to their attention, economies through a more efficient exciter and economies from a better feed pump. The feed pump is in and operating. The exciter is being installed, certain parts have not been received. The engine has been overhauled and is operating. Within the last few days the company had requested the Hartford Insurance Company to make an inspection of the engine with reference to placing an insurance policy on this engine against certain kinds of breakdowns. That inspection was made and the Hartford Company agreed to carry insurance to a total amount of about forty-three thousand dollars as against accidents, provided the company installed a certain safety device which it has ordered and which it will install as soon as it can be delivered from the manufacturer. Pending the installation of that safety device they are not running the engine actively on the total load.

Q. (By Commissioner Osborne.) Can you tell us the cost of the engine from the time they put it in, including all of these various additions and improvements?

A. No, sir, I could not, but the records of the company as to capital account—

Q. As compared with the cost of a new turbine.

A. Undoubtedly the present day cost of a new turbine of exactly the capacity required for the plant would be slightly lower than what the company may have paid for this engine during the period of high prices. The records will show what they actually paid.

Q. This is the thought I am trying to develop; they bought this engine—

A. Under stressed conditions.

Q. —it is assumed they were justified at the time by the conditions. I am wondering whether having bought this engine and repaired it whenever it has broken down, and with these various improve-

ments, apparently a number of them to bring it up to a proper state of efficiency, whether they have not gotten an engine which is perhaps less efficient and has less life than they would have if they had at some stage of the proceedings abandoned this engine entirely and put in a proper engine.

A. That, of course, depends on your treatment of the renewal cost and the new equipment. I am not competent to testify how many dollars have been spent for initial capital and total maintenance, but that could be obtained from the records of the company and their annual reports on file with your commission.

Q. What does an engine like this cost new?

A. Twenty-five thousand dollars.

Q. As against one hundred and fifty thousand dollars for a turbine?

A. One hundred and fifty thousand dollars was a whole new plant.

Q. What would a turbine cost?

A. Alone?

Q. Alone.

A. This I will have to give you from memory; I am wondering if I am quite straight on it. I really do not know off hand, but I believe Mr. Franklin has a quotation from the Westinghouse Company on a smaller machine. If he is willing to utilize that and let me have it for a moment, it will give me a line on about how much. I dislike putting in the record a figure like that from memory when I have something better available. About sixteen thousand dollars.

Q. It could be bought for less then?

A. Slightly less. Based on the particular machine they have offered in this proposal.

Q. Slightly less?

A. Well, nine thousand dollars. The other improvements that have been made to the plant have been a complete overhaul, normal overhaul of the

boilers, because of the fact they were able to take one boiler off of the line at any one time.

Q. (By Mr. Starr.) What was the capacity of the turbine you say could be bought for sixteen thousand dollars?

A. I am reducing it to the basis of a five hundred machine. The quotation here is on a three hundred and have had to reduce it upward. That seems like a very low price. I do not know whether this is a less efficient machine.

Q. Does anything else occur to you with reference to information you could furnish the Commission respecting your investigation of this property, which will be beneficial in determining a fair rate, a reasonable rate?

A. There were certain items of operating expenses which seemed lower than those on properties with which I am associated, because of economies obtained through the management of three or four different companies by the same operating unit.

Q. (By Commissioner Osborne.) Here?

A. Yes. The reading of meters, for instance, the billing to customers, is done much more cheaply per customer than it is in towns of the same size having an electric utility operating alone. The same is true of certain items of general expenses. I do not know whether this is the sort of information the Judge wished me to convey to the Commission.

Q. (By Mr. Starr.) Anything that might occur to you that would be beneficial and furnish the Commission information that I have not developed in my questions.

A. There is a very involved situation with a certain historical background on the street lighting and I would prefer my associate who is going to follow me on the stand to develop that because he investigated it rather more thoroughly than I did.

CROSS-EXAMINATION

By Mr. Miller:

Q. What was the revenue of this company in 1922?

A. The total operating revenues from all sources as per this table, Exhibit R-8, is $154,395, made up of revenues from electric operations and the sales of steam to the Gas Company, but not including miscellaneous revenues from the sale of electric appliances or any other miscellaneous revenues they might have had.

Q. In order to ascertain the profit or loss from operating the plant for that year it was necessary to deduct some distribution expenses, wasn't it? What were they, the distribution expenses?

A. In order to do what?

Q. To find out whether they made money or lost money, you had to take out distribution expenses.

A. That is one of the items of expense.

Q. That is one. How much was that?

A. As per this statement, $6,285.

Q. Then there were what you call utilization expenses; how much were they?

A. Utilization expenses, which are the expenses for the maintenance and operation of the municipal street lighting system, amounted to $7,456.

Q. And general and miscellaneous expenses amounted to what?

A. $18,317.

Q. And your general amortization how much?

A. $11,697.

Q. And taxes how much?

A. Taxes $9,132.

Q. How much do those aggregate?

A. They should add up to this figure at the bottom, $138,207, if there has been no mistake in transcribing this.

Commissioner Gnichtel: $138,297, isn't it?

Witness: 297, yes, sir.

Q. That included, however, the production expenses, the operating expenses, didn't it?

A. Surely, that is the total of all items of operating expense.

Q. Deduct the operating expenses and state how much it would then add for distribution, utilization, general and miscellaneous expenses and the other expenses?

A. $53,799, being the difference between the total expenses including general amortization and taxes and production expense of $84,498.

Q. How much did you say was left, eighty-four thousand dollars, isn't it?

A. My subtraction gives $53,799.

Q. Why shouldn't it result in the items, total production expenses, $84,498?

A. You asked me to deduct that from the total expenses and give you what was left for distribution, utilization, commercial, general and miscellaneous.

Q. That left $84,498 to produce the current, didn't it?

A. Yes, sir, that is in the table.

Q. How much current did they sell, expressed in kilowatt hours?

A. 1,530,047.

Q. Now, at three cents per kilowatt hour, if they had purchased it all, how much would it have cost the company?

A. About forty-six thousand dollars, but they would not, of course, have purchased just the amount they sold; they have to buy more than they sell; there are losses between the sources of purchased power and the customers. Of course that figure—I want to take that out of the record, if I may, because that only represents three cents times the kilo-

watt hours sold and you have to have a great many more kilowatt hours than you sell.

Q. How many more would you have to buy; in order to sell one and a half million kilowatt hours how much would you have to buy?

A. You would have to buy an amount represented by the sum of the one and one-half million and the lost and otherwise unaccounted for three hundred and ninety-seven thousand, about nine per cent. more that the sum of those two for the losses between the Millville Manufacturing Company and the distribution feeders of the company.

Q. How much profit would the company have made if it had bought all the power that year?

A. Based upon purchasing all its power at 2.67 the profit would have been $24,512. Of course, based on buying at three cents, the profit would not have been as much, by three-tenths of a cent.

Q. They make some profit from the current generated at the water plant, don't they?

A. The company makes either profits or losses on its operations as a whole. You cannot segregate one source of power from another source of power to see how much profit it made on that, because it all comes under one set of feeders.

Q. In fixing a rate I thought you would take these factors, to wit, the cost of the current at the water plant and the cost of the current purchased.

A. Yes, sir, we have done that.

Q. As two essential factors in fixing a rate.

A. Yes.

Q. Using those two factors, what does it cost per kilowatt hour to produce this current?

A. If the company had bought all its requirements—

Q. And used the electric hydro plant?

A. And used the hydro plant and had not paid three cents, but had paid two and three-quarter

cents, the total cost of production would have been in 1922, $45,718. It is all worked out in this table.

Q. How much per kilowatt hour does that figure, can you state?

A. Per kilowatt hour sold or per kilowatt—

Q. No, the cost per kilowatt hour to the company if they used the hydro plant and bought the rest of the current?

A. I will have to figure that up. The average cost of production of all the energy which it would have required under those conditions would have been about 2.38 cents per kilowatt hour purchased and generated, exclusive, of course, of any fixed charges on the investment in the hydro station. The cost of purchased energy must include some return to the man who owns the equipment and manufactures it, whereas in the hydro it is the bare cost of operation. Those two figures again are not comparable without further anaylsis, Mr. Miller.

Q. How does that compare with the cost of current in neighboring towns, if you know; say, Vineland?

A. I do not know, and I do not see what value it would be to introduce it unless you know all the conditions of operation. Here we are confronted with a definite set of conditions applying to this company, and it seems to me the criterion is what they could do under the best possible conditions in Millville and not some other town. Of course I could show figures poorer or better from different ranges of my experience, but there would be no point in that.

Q. Wouldn't you say the value of the current to the public in that vicinity might be in some sense valued or determined by knowing what it cost in neighboring localities?

A. No, sir, because the load may be very different. There are all sorts of conditions. Here the

company has a favorable condition due to the generation of part of its requirements by a hydro-electric station without the consumption of fuel and it must make up the remainder of its requirements with a very poor load factor, a very poor set of operating conditions. I do not know whether you could find the same set of conditions in any other city in the neighborhood or not.

Q. Wouldn't you say if it cost this company 2.38 cents per kilowatt to generate—

A. Not to generate, no, sir.

Q. To obtain, I will put it that way; that sixteen cents is too big a charge to a consumer?

A. Well, there are a great many steps between the cost of production and the rate.

Q. But you have had experience in these matters; wouldn't you say ordinarily that that is an overcharge?

A. I would not say it was an overcharge. It has been admitted by the management that the rates are high because of a certain set of conditions.

Q. What do you say; are they high?

A. They are high, but then when you stop to consider the street lighting situation and the ridiculously low rate they get, compared if you please, with other cities in the neighborhood, there is some justification, of course, for the higher rate in order that the company may earn a return. But to jump merely from so much production cost and wipe off the record all of these other things that are just as much the obligation of the company to pay for as the kilowatt hours from the bleachery, and then jump immediately to the rate, of course, that will not get us anywhere. It requires a much finer analysis for all of that.

Q. We are here dealing with the rates. You say this is not a just and reasonable rate now in force.

A. I said considering only—no, I did not say it was not a just and reasonable rate. I said considering only the lighting situation the rates are somewhat high, but considering the situation as a whole, the company is just about able to make a return on the valuation of the property, from our standpoint. In other words, it is the total dollars at the bottom that count and not the cents per kilowatt hour at odd places here and there in the set up.

Q. Isn't the question how much should be exacted from the consumer who has granted you a monopoly in the business.

A. It must be fixed—

Q. So you should not overcharge him for the commodity or current or service.

A. Of course that is exactly what we maintain, that the service ought to be charged for to all customers at a just and equitable rate, and under those circumstances no one is bearing the burdens of anyone else, and the company makes it's just living. That is for this Commission to decide in this case. But to just talk about some one rate and leave out all the others does not get the answer.

Q. Don't you have to fix some one rate?

A. No, sir.

Q. Isn't that what this Commission is for?

A. No, sir; we fix all the rates.

Q. Isn't it your business and the business of this company to purchase such efficient machinery that it can supply the current at a just and reasonable rate as determined by this Commission?

A. It is the business of this company to operate its property efficiently and thereby sell to all its customers at just and reasonable rates, and you cannot fix any one rate first and start there; you have to analyze the situation as a whole. One kind of customer has an entirely different inherent expense in being served than another kind of customer and

all of those factors, as you probably know in other analyses you have made, have to be set up against the particular kind of customer that they affect.

Q. Oh, yes, but there are not very many classes; they are all specified here in this one table.

A. It does not make any difference how many there are. You cannot just fix one arbitrarily and then deduct something for the rest.

Q. Don't you think sixteen cents is pretty high for a commercial customer, the ordinary citizen who burns it in his office or his home?

A. I can take you to communities where it is higher.

Q. In South Jersey can you do so?

A. No, sir, not in South Jersey.

Q. Can you take me to any in New Jersey?

A. I am not sufficiently familiar with the details of operation of New Jersey companies. It just happens to be out of my range of experience.

Q. You cannot name a Jersey Company that has a higher rate?

A. As I say I am not familiar off hand with New Jersey companies, but there are companies that have those rates. However, that is one rate, Mr. Miller.

Mr. Miller: That is all.

(Recess from 1:00 to 2:00 P. M.)

AFTER RECESS

Harvey R. Martz, sworn on behalf of Millville Electric Light Company.

DIRECT EXAMINATION

By Mr. Starr:

Q. Where do you reside?

A. I reside in Philadelphia.

Q. Are you connected with the firm of Dey & Zimmermann?

A. Yes, sir, Valuation Engineer in the employ of Dey & Zimmermann.

Q. What is your profession, if any?

A. Civil Engineer.

Q. A graduate of what institution of learning?

A. I am not a graduate.

Q. What has been your experience in the particular line of work you have been doing for Dey & Zimmermann?

Commissioner Osborne: What is their business?

Witness: They are engineers, they manage properties, they do construction work and make reports of companies.

Q. How long have you been in business with them, Mr. Martz?

A. I have been with Dey & Zimmermann since January 1st, 1921.

Q. What was your experience prior to that time with reference to the valuation of public utility properties?

A. Well, from July, 1913, to December, 1914, I was with the J. G. White Engineering Corporation as Assistant Bridge Engineer on the valuation of the Atlantic Coast Line Railroad. From March, 1915, to March, 1917, I was with the Boston & Albany Railroad as Assistant Engineer of the Valuation Department. From March, 1917, to January 1st, 1920, I was with the Public Service Commission of the Commonwealth of Pennsylvania, as Assistant Engineer of the Bureau of Engineering. At the time I left there I was in charge of the Valuation and Facility Section. From January 1st, 1920, to January 1st, 1921, I was with the Mitten Management of Philadelphia Rapid Transit Company, a member of the Valuation Staff. As such member I presented before the Commission the valuation of the Philadel-

phia Rapid Transit Company. From January 1st, 1921, to the present time with the firm of Dey & Zimmermann, engaged in making investigations and reports on public utility properties.

Q. To what extent have you performed service along those lines in making appraisals of public utility properties?

A. All this work that I have enumerated here was in making valuations.

Q. Did that work include the examinations and appraisals of electric light properties?

A. Yes, sir.

Q. Did you attend conferences between Mr. Carver, representing the Commission, and Mr. Temple, representing the municipality, with reference to the effort to arrive at a valuation of the Millville Electric Light Company's plant?

A. Yes, sir, I did.

Q. Have you reduced to tabulated form the result of the agreement reached with reference to any portion of the value of the property?

A. I have not made a tabulation designating the items upon which we agreed, but I have made up a complete estimate of the cost of reproduction new and such cost less accrued depreciation as a result of our conference work.

Q. Was any portion of that agreed to by the other two gentlemen?

A. Yes, sir.

Q. (By Commissioner Osborne.) Did they see it all?

A. They have not seen this yet.

Q. They saw the underlying data?

A. Yes, sir.

Q. Did they dissent to any of it that you have incorporated there?

A. I would not say. Up until the last minute we were still discussing some few items upon which

we had not reached agreement and I could not say definitely at this time as to whether there was dissent.

Mr. Starr: I introduce in evidence the report.

(Reproduction estimate with details, received and marked Exhibit R-10.)

Mr. Miller: What is this document, Judge Starr?

Mr. Starr: I will have the witness explain.

Commissioner Osborne: He just told you what it was.

Mr. Miller: Judge Osborne, what is this supposed to be; something agreed to by the engineers?

Commissioner Osborne: In part. The witness said that is a valuation.

Mr. Miller: That he has made up?

Commissioner Osborne: That he has made, based upon, largely upon the conferences which were held and the data at those conferences; most of the items having been agreed upon, but possibly some of the later ones were still under discussion, possibly having not definitely been agreed upon. Is that right, sir?

Witness: Yes, sir.

Q. (By Mr. Starr.) I wish you would indicate the portions of this appraisement which were agreed upon by the engineers or not dissented from when you had your conferences so we will have that on the record, and then you can explain the balance of it.

A. The first item on page 4, an irregular shaped plot of ground approximated at 308 by 342 feet, and so forth, twenty-five hundred dollars was agreed

to. The second item, rectangular shaped plot 115 by 115 feet, and so forth, one thousand dollars was agreed to as the value of that plot of land, but not as the value which is assignable to the Electric Light Company for the reason that a part of the building down there is occupied by the Water Company and the representative of the City contended that that portion should be deducted.

Q. (By Commissioner Osborne.) Did you agree to that?

A. No, sir.

Q. Why not?

A. Because that building there is practically all one building. A small part of it is occupied by the Water Company equipment, as I say, and it seemed to me the only practical solution was to put that in with the Electric Light Company and have the Light Company charge a rental to the Water Company for the use of a portion of it, because it would in a measure, interfere with their operation to have that owned by another company.

Q. For this purpose that is not necessary; all you would have to do would be to allocate so much of it as being used and useful; if two-thirds of the building were used by the Electric Light Company and one-third by the Water Company you would take the value and credit two-thirds of it to used and useful property.

A. Yes, sir, that was the contention of the City's representative. I took the position that we ought to leave it go in and charge a rental for it.

Q. Would you get the same net result?

A. Yes, sir.

Q. Then it does not matter which method you use?

A. No, sir.

Q. Did you put it in, do you charge a rental for it?

A. There is no rental in that statement for it.

Q. Because there is no operating income or expense here?

A. No, sir.

Q. This is merely the value. Did you make a note of the fact that that would be treated in that way?

A. I might say in explanation of that, that we wrote a report on this property in January, 1922, for the purpose of this hearing and in there we called attention to that and stated that the company ought to charge a rental to the Water Company for the use of that portion.

Q. You do not know whether they do or not?

A. I do not.

Q. Assuming they do not, how much of the property then is used and useful, because if they do not handle it in the other way they must handle it by allocating so much of the property to the Electric Company.

A. The representative for the City contended that the value which is assignable to the Electric Light Company was four hundred and thirty-one dollars. I would not seriously disagree with that finding. I have not made any of my own. The next item, water rights on Maurice River and so forth, twenty thousand dollars; we did not agree on that. The representative of the City did not offer anything in place of that twenty thousand dollars.

Q. (By Commissioner Osborne.) You agreed to that?

A. Yes, sir. The next, Account 107, General Equipment, was agreed to by the parties.

Q. You need not state what was agreed to, that will only take time. I understand almost everything is agreed to.

A. There are some half dozen items, I think, in this whole list—

Q. That are not agreed to?

A. Yes, sir.

Commissioner Osborne: So by assuming everything is agreed to except those half dozen items, I think we will save time.

Q. (By Mr. Starr.) I understood on page 1 and page 2, giving the reproduction cost down to the total of $314,117, the reproduction new and $247,461, with the accrued depreciation deducted, had been agreed to by the engineers; is that a fact or not?

A. No, sir, that is not a fact.

Commissioner Osborne: Judge Starr, the thought that occurred to me was this: Inasmuch as he has already stated that practically everything has been agreed to, if you had him state the exceptions it would save a great deal of time.

Mr. Starr: I will do that.

Q. Instead of indicating those items which were agreed to, indicate those which were dissented from or not agreed to by the other engineers.

A. On page 5, under Account 108, Item 3, one tail race, 15 feet wide 90 feet long.

Q. (By Commissioner Osborne.) What was it?

A. A tail race to the hydro-electric, that is where the water that passes through the water wheels runs off.

Q. A tail race?

A. Yes, sir. That item was not agreed to. We might have gotten an agreement if we had a little more time. Our figure is $2240 and the City's representative's figure is $1041.

Q. (By Mr. Starr.) What have you to say in support of your estimate of the proper valuation of that item?

A. I have this to say: That we analyzed it and

worked it up in detail and this is the total we estimate it would have cost. On page 6, Item 3, one-story brick building, 35 by 35 by 13 and so forth; that is part of the building which houses some Water Company equipment, in the same category as the previous one. There was no disagreement as to the cost, but as to the allocation.

Q. What is the cost?

A. $3626 cost new.

Q. What proportion of the building does the Water Company use?

A. That particular part of the building is occupied entirely by the Water Company equipment.

Q. What part of it?

A. That part that is enumerated here, the one-story brick building, 25 by 35 by 13.

Q. The whole building is used by the Water Company?

A. Yes, sir, it is part of the whole situation.

Q. It is attached to the other building referred to?

A. Yes, sir, part of it.

Q. Was it valued separately?

A. Yes, sir.

Q. Then there is no question, if it is all used by the Water Company that all of it should be assumed by the Water Company and none by the Electric Company, isn't that so?

A. I do not make it clear to you. This is really one building composed of a number of different rooms or parts and in one of these parts is this equipment of the Water Company and the Light Company has no equipment in that part.

Q. Is that part valued separately?

A. Yes, sir.

Q. Did you agree on the value?

A. No, sir, because the representative of the City said that no part of that was assignable to the

Electric Light Company and therefore he did not consider it.

Q. No part of that particular part?

A. Yes, sir.

Q. Is not that true, if it was all used by the Water Company?

A. Yes, sir, but I must state my original position, that being a part of the entire group there I thought it was more practical for the Light Company to own that and charge the Water Company a rental.

Q. That may be true, assuming they do charge a rental but if they do not charge it—you say you have no knowledge of it?

A. No, sir.

Q. Therefore, you have no knowledge as to whether or not that property—whether the Electric Company is compensated for the use of that property. That being so and you do know, however, that it is not used by the Electric Company, why should not you deduct it from the valuation of the Electric Company as not being used and useful?

A. Well, my position is this: That the Board in fixing the earnings of this company should take into consideration the rental which should be charged for that part of the building.

Q. (By Mr. Miller.) Who owns the land?

A. The Millville Electric Light Company.

Q. (By Commissioner Osborne.) What we are trying to find out is whether we have the figures before us that will enable us to do that very thing or adopt some method of withdrawing from the rate base so much of the property as is used by the Water Company and not by the Electric Company.

A. Yes, that is clearly set forth here. It states in here just exactly what it is used for and the value is given for it. The next item is on page 6, a one-story frame building 50 by 16 by 15 and so forth, ad-

joining a brick building housing the electric equipment, containing the heating boiler for supplying the steam heating system for all the buildings in the group. That we agreed on the cost to reproduce new at six hundred and thirty-six dollars, and the representative of the City contended that if that was used to supply heat for the part used by the Water Company, that it should be allocated, the value, between the Water Company and the Light Company.

Q. (By Mr. Starr.) Is that in the same category as No. 3?

A. Yes, sir, with this exception, it is not actually occupied by any equipment of the Water Company. It is occupied by a facility which is used by the Electric Light Company to heat the entire building, group of buildings.

Q. (By Commissioner Osborne.) An engine or boiler room.

A. It is a boiler room. The next item is on page 9, two boiler feed pumps, Dean Pump Company, $1008—

Mr. Temple: May I interrupt just a minute, please? I do not know whether I am permitted to or not. I just want to call attention to another item on page 7, Item 7.

Mr. Betts: Also No. 5 and 6.

Mr. Temple: Of course that was allocated, which I think you did not mention, and 7 and 8, were I believe, Water Company filters; both 7 and 8, and I think you will find are in the same list as what you have mentioned.

Witness: All right. Page 7, Item 7, one-story frame building, 60 by 34 by 15, containing Water Company filters, cost new, $2,146. That is in the same category as the others.

Item 8, one-story frame lean-to, 20 by 42 by 23, cost new, $1,369.

Q. (By Mr. Starr.) Was that agreed to, that is, the amount it cost new?

A. No, sir, neither of those.

Q. (By Mr. Miller.) Were those on land, title to which was in the Electric Light Company?

A. Yes, sir.

Q. (By Mr. Temple.) Now, item 9, Mr. Martz, there is one more that has to do with the steam plant.

A. That is not included here in the used and useful property. You are speaking of the athletic field?

Mr. Temple: No, sir, I am talking about the concrete block building, 115 by 42 by 23. In passing that over as an item agreed to, I think you will recall and probably will be willing to remember in this particular case that the stipulation was reserved, the reservation was made by me in the minutes of the conference, which Mr. Carver's absence will not permit us to have access to at this moment, but which cuts out all valuation of any steam plant equipment except the question of checking the price with you, isn't that right?

Witness: Yes, sir. That is, you disputed—

Mr. Temple: I happened to just merely remember that from the record.

Witness: But as to cost of reproduction of the building new, you agreed to.

Mr. Temple: Yes, as to the cost only, but as to the value in this particular case I made a stipulation and it was agreed to by all in sitting together, in regard to the steam plant prices I did not regard a single one of those as value in the business and I still do not.

Witness: Page 9, Item 2, two boiler feed pumps, Dean Pump Company, $1,008. In that case the representative of the City estimated the cost of one pump which he contended was sufficient.

Mr. Temple: That was two pumps; there were two pumps there and I put them both in, not one.

Witness: Was that in your $494?

Mr. Temple: No, two hundred and forty-seven dollars each, four hundred and ninety-four dollars, yes, sir.

Witness: Two smaller pumps he used than what are actually there and at a lower price.

Mr. Temple: I claim those pumps are way oversize.

Witness: A difference of about five hundred dollars.

The next item is page 10, Item 9, power plant piping. In that case our estimate of the cost to reproduce new was $9,625. The representative of the City, $6,000. We could not agree on that estimate.

The next item is on page 11, Item 1, Rice & Seargent steam engine. That is a prime mover in the steam power plant. Our estimate of the cost new, $25,000. The City's representative contended that it had no value and therefore made no estimate for it.

On page 11, Item 2, one 12 by 12 horizontal automatic high speed engine, $2,428. The City's representative had $1,105. That is one of the items we were discussing at the last minute and I am not clear at this minute whether we would not have compromised on that.

Q. (By Commissioner Osborne.) What do you say it is worth?

A. $2428 in this estimate. On the same page 11, Item 3: two centrifugal pumps, Gould's Manufacturing Company, the total for those two items in this report is $1,590. The representative of the City, $1,014. That was an item we should have compromised.

The next item is page 16, Item 5, one switchboard, 11 panels, 2 sections each, 2 inches thick and so forth. Our estimate for that, cost new is $8,622. The City's representative's estimate was $3,500; we could not agree on that item.

Q. (By Mr. Starr.) What have you to say with reference to your estimate?

A. In that connection we had our specialist on that kind of work, who had been down there in the plant, had worked on the switchboard, had synchronized the two plants, made an estimate of the cost to build that board new and this is the result of that estimate.

Q. (By Commissioner Osborne.) Are all these prices undepreciated?

A. They are so far. I have them depreciated and will call attention to them later. The next item is on page 17, Item 9, station wiring, $1,600. The representative of the City's estimate $750 for that item.

Q. (By Mr. Starr.) What have you to say with reference to your appraisal, that in your judgment that is reasonable or otherwise.

A. Yes, sir, that is a reasonable figure.

On the same page 17, Item 11, one switchboard, 3 panels, 88 inches high by 60 inches wide; that is the switchboard in the steam plant; that we have estimated to cost new, $2,100. The representative of the City, $1,036. We could not agree on that.

On page 19, Item 3, cross arms; our estimate of

cost new is $11,495. I do not have the City's representative's figure on that, but it is my recollection he was very close to that, but I could not state his figure. We would have agreed on that if we had had a little more time.

Q. What have you to say as to your estimate?

A. We think it is fair and reasonable.

On page 19, Item 1, under Account 123, distribution system, conductors. We did not have the City's representative's figure for that item so I cannot say that that is in agreement or disagreement.

Q. What have you to say about $20,188?

A. I think that is a fair and reasonable estimate.

On page 24—I do not have an item for that—wire, under Account 128; our total for that is $7,708 cost new. We did not have the City's representative's figure for that item, so I cannot say whether it agreed with this or not.

Q. What have you to say about the reasonableness of that item?

A. We think that is a fair and reasonable estimate. That covers it.

Q. (By Mr. Betts.) Right there, what was the price used per pound for copper?

A. For copper, 19 cents.

Q. (By Mr. Starr.) On pages 1 and 2 of the exhibit is there indicated there the reproduction cost new as of the 1st of January, 1923?

A. Yes, sir, on page 2.

Q. What is that total?

A. That is the reproduction cost new of labor and material, $314,117, to which we add what we consider the appropriate overhead cost of $48,766; also under working capital, materials and supplies, $5,447; cash working capital, $20,780, and an item of going concern value of $50,000, making a total of $439,110 as the estimated cost to reproduce the

property new as of January 1st, 1923.

Q. What is the value fixed by you after deducting accrued depreciation?

A. $362,106.

Q. In your judgment are those figures accurate and correct, so far as the appraisal of the property is concerned?

A. Yes, sir, we believe those figures are substantially correct. There may be minor errors here and there in making multiplications.

Q. As to the items which you have added to reproduction cost, indicated on page 2 as indirect and overhead costs, I wish you would explain in a general way what matters were taken into consideration in arriving at those five figures.

A. The first item is preliminary and organization cost, 2 per cent. of the total cost of labor and material. That is the expense incident to getting the thing together, to investigate the proposition and organizing the company, $6,282.

Q. Is that reasonable or otherwise?

A. We think it is reasonable.

Q. Administration cost, Item 2, 2 per cent. on Item 3.

A. That is the cost of administration during the construction period. We estimate it the same cost as preliminary and organization, $6,282.

Q. Is that fair or otherwise?

A. We thing it is fair.

The next item is engineering and superintendence, that is six per cent. of the total cost of labor and material.

Q. What have you to say to that.

A. We think that is a fair and reasonable estimate of the cost on the moneys that are invested during the period of construction. Taxes and insurance, the next item, one and one-half per cent. of the total cost of labor and material, $4,712.

Q. What about that?

A. That we think is a fair and reasonable estimate of that expense.

Item 5, loss of interest during construction, three and one-half per cent. of Item 21, which in this case is total cost of labor and material plus these preceding items of indirect or overhead cost, amounting to $12,643. We think that is a fair and reasonable estimate.

Q. On the next page, page 3, working capital.

A. Materials and supplies is the coal which was on hand, practically all coal, as of January 1st, 1923, $5,447. The cash is equivalent to two months operating expenses.

Q. You have added going concern value of $50,000.

A. Yes, sir.

Q. I wish you would explain in detail the reason for making that addition.

A. The going concern value as we understand it, is the value that the company has over and above the cost of labor and material, by virtue of being in the business and doing business and having acquired its business. It is a judgment figure that was arrived at after considering the history of the company. The other items on that page 3 are items of property owned by the company which are not used and useful, amounting to $6,148.

Mr. Starr: I offer, if the Commission please, the original report made by Dey & Zimmermann under date of June 26th, 1922. That is the report that has been referred to in the testimony of Professor Temple and I said I would introduce that as an exhibit when our case was presented.

Witness: One copy of that was given to the Engineering Department of the Board some time ago. I have two here; one is our file copy.

(Report of Dey & Zimmermann No. 1814, dated June 26th, 1922, received and marked Exhibit R-11.)

Q. (By Mr. Starr.) If there is any particular feature of either of those reports that I have not asked you about that you desire to make any special explanation to the Commission of, I wish you would do so.

Commissioner Osborne: What percentage of your appraisal is that going concern value?

Witness: It is about twelve and one-half, nearly thirteen per cent.

Q. (By Commissioner Osborne.) How does that compare with going concern value attributed to other companies that you may have appraised, similarly situated, if you have appraised such.

A. It is about that figure. It ranges anywhere from 8 to 20 per cent. in other cases.

Q. Did you take into consideration the past history of this company?

A. Yes, sir.

Q. Its ability to earn money, whether it had earned money or not?

A. It has not earned money.

Q. If it had earned money, would you have enlarged that percentage?

A. No, sir.

Q. So that a company that is losing money has a greater going concern value than one that is not.

A. I would not say that.

Q. Isn't that a logical deduction from your answer?

A. I said I would not change it. In this particular case you have a utility whose earnings are fixed. In the case of an industrial it is not regulated, you can gauge the going concern value from its earn-

ings, but in this case you are trying to fix the earnings, and it is my judgment that whether they have earned money or not, they have a going concern value to be considered in the rate base.

Q. (By Commissioner Osborne.) Yes, to be considered, but why consider it so largely in the case of a company that is not earning? Do you consider it to be as valuable a proposition if it is not earning money?

A. I would say from an industrial standpoint it is not, of course, but from the point of view of regulation, where the company can only earn what it is permitted to earn—

Q. You mean from the point of view of a valuation upon which to base a rate?

A. Yes, sir.

Q. (By Mr. Starr.) Is there anything particular about either of those reports, the one made in the summer of 1922 and the one just presented, that you desire to explain particularly to the Commission?

A. This report, No. 1814, which was made in January, 1922, contains the following sections: (1) Corporate history; (2) description of the property and territory served; (3) franchises and rates; (4) balance sheets; (5) earnings and expenses; (6) valuation; (7) capital requirements; (8) summary of conclusions; (9) appendix A, details of reproduction estimate. The total of the estimated cost of reproduction new in this report is considerably higher than in the estimate submitted here in evidence. That is due to certain errors that were discovered in this estimate through the work in the engineering conference, change in property and change in price base. From our point of view this report should be considered in the light of this reproduction estimate which is submitted in evidence.

Q. (By Commissioner Osborne.) How much difference was there?

A. We have in here a total of $423,528, cost to reproduce new, that is, without any allowance for going concern value, and adding that it is $473,528; I think that is the figure.

Q. That is in R-11, when you say in here?

A. Sir?

Q. R-11 you are referring to?

A. Yes, sir.

Q. Four hundred and seventy-five thousand dollars approximately?

A. Yes, sir.

Q. How much did you finally conclude it was worth?

A. In this report $439,110.

Q. Thirty-five thousand dollars less.

A. Yes, sir.

CROSS—EXAMINATION

By Mr. Miller:

Q. You finally concluded that the value of the plant, taking the reproduction cost new less accrued depreciation was three hundred and sixty-two thousand dollars, didn't you?

A. Yes, sir.

Q. Of that, fifty thousand dollars was what you call going concern value.

A. Yes, sir.

Q. In estimating the value as going concern value, did you consider that this corporation had a franchise of some sort in Millville?

A. I considered they had the right to operate in Millville, yes, sir.

Q. You don't know under what grant, that is, what ordinance or statute they get such power, do you?

A. Yes, sir, in our report 1814 we state that.

Q. What do you state?

A. There we state, under date of July 10, 1891,

the Millville City Council passed an ordinance, No. 42, authorizing the Millville Electric Light Company to erect poles and place wires over, through and across the streets and alleys of the City of Millville for the transmission of electricity, to furnish light, heat, power or any other purposes whatsoever. The conditions of this ordinance are set forth opposite this page, which is a copy of the ordinance. As may be seen, the ordinance was effective August 15, 1891, and was for the period of three years. It has never been renewed or extended, nor has any other ordinance been passed to supersede it.

Q. Notwithstanding those facts you considered the value of the franchise in estimating what you call going concern value?

A. I would not say we considered the value of the franchise.

Q. You considered the franchise as a factor.

A. Yes, sir, that the company had the right to operate.

Q. The right to do business. Now, where do you draw the distinction between valuing the franchise and setting up what you call going concern value as you have now defined it?

A. If I was considering the value of the franchise I would put a definite value on it as such, as a franchise.

Q. (By Commissioner Osborne.) Distinguished from going concern value?

A. Yes, sir. Going concern value might take into consideration that the franchise had some value or it might not. The company as a going concern certainly has a going concern value. It must have the right to do business, otherwise it is not a going concern.

Q. You assumed then, inasmuch as it was doing business, it had the right to do business?

A. Yes, sir.

Q. But without determining how extensive that right might be or to what extent it might be limited because you did not give it any fixed value, that right.

A. No, sir, I did not.

Q. You merely took into consideration the fact that there was a concern that was doing business?

A. Yes, sir.

Mr. Starr: As I understand the statute, if the Court please, there is a statute of the State which permits an electric light company to use the public highways, without the necessity of a franchise.

Commissioner Osborne: They do not have to have a franchise?

Mr. Betts: Except in a city or town, they have to have a franchise.

Mr. Starr: There is a designation of the poles.

Commissioner Osborne: They have to get some authority of the local governing body to erect poles.

Mr. Starr: The designation of the line. There has been that here, because the contract of 1915 indicates where they are to be placed, so the city is not in a position to say they have no right to use the highways.

Mr. Miller: If your Honor please, that is something we have never raised. The designation of the poles was in connection with the contract to light the streets, as I recall. That is an entirely different proposition. If your Honor please, I do not want to argue what some day may be an important litigation. I want to bring out there was a question about the

franchise and this witness has answered very fairly. If the law is as Judge Starr states, of course that is something else.

Q. (By Mr. Miller.) Did Professor Temple agree to include that item of fifty thousand dollars?

A. No, sir. He did not disagree either; it was not discussed by the conference.

Q. Did he agree to include the value of the steam plant or did he treat it as scrap?

A. He took the position that he would go along in analyzing the cost to reproduce the steam plant, without prejudice to his standpoint which was, that the steam plant had no value.

Q. You place a value of thirty-six thousand dollars less accrued depreciation of eighteen thousand dollars, didn't you?

A. For what?

Q. For the steam engines.

A. Steam engines, yes, sir.

Q. You have an item of thirty-three thousand dollars for furnaces, boilers and accessories at the power plant. Did Professor Temple agree to that item?

A. Furnaces, boilers and accessories he did, unless there are some exceptions noted in my testimony as I went over the individual items that go to make that up.

Q. Did Professor Temple agree that that value of thirty-three thousand dollars should be applied, that is, after allowing for the depreciation, or did he say it was scrap?

A. You mean the $33,207?

Q. Yes.

A. As I have already stated, Professor Temple made no agreements whatever, relative to depreciation.

Q. Did he think that was scrap or was a proper part of the plant to be valued.

A. What, the boilers?

Q. These boilers.

A. He agreed to these figures as to the cost to reproduce them new, but on the basis that it would not prejudice his case, which was that the whole steam plant should never have been built and has no value to the company.

Q. (By Commissioner Osborne.) The idea is this: He said the whole steam plant was of no value?

A. Yes, sir.

Q. But assuming it might be valuable somewhere else or under some other conditions, the price you determined was fair?

A. Yes, sir.

Mr. Temple: The agreement was purely as I said, as to matters of cost, no matter where they were, but having no bearing on this case.

Commissioner Osborne: If we decide it had a bearing on this case, then the figures are in. If we decide it has no use in this case, the whole thing comes out.

Mr. Temple: I merely did not want to seem to be approving them as to value.

Mr. Starr: There is no contention you prejudice yourself at all.

Q. (By Mr. Miller.) You had a value of twenty thousand dollars on the easements or rights that the Electric Light Company had to take water from the Union Lake Pond?

A. Yes, sir, the water rights.

Q. How did you arrive on that valuation, on what basis?

A. We put that on the basis of what the company paid for it, and what we had in our previous appraisal, which was presented here to the Commission and checked and approved by them, twenty thousand dollars.

Q. How many horse power can they take; did you figure it on that basis?

A. No, we did not figure the value of it on that basis.

Q. Do you know how many horse power?

A. I have it in the record here somewhere.

Q. Please state it.

A. I do not have the copy of the deed here. We ought to have that in order to get it stated clearly. The deed gave them the right to enough water out of the mill race to operate the machinery that they had in the plant and provided that in case they changed the machinery it was to be measured—I do not recall those particular figures. You have a copy of that.

Mr. Starr: The maximum is 150 and the minimum 100 horse power.

Q. When you made the valuation, you had before you these necessary basic facts, did you, that is, the amount of horse power and so on?

A. Yes, sir.

Q. You valued that at twenty thousand dollars, this right or easement that they have.

A. No, we do not necessarily value it at that here. We called it the estimated cost of reproduction new.

Q. You are trying to find the value, aren't you?

A. Yes, sir.

Q. Isn't that the value of this right?

A. It is one of the elements of it.

Q. What are the other elements?

A. Its use might be another one, its depreciated condition might be another one, what they actually paid for it might be another one.

Q. When you say that the twenty thousand dollars is the reproduction value—

A. Cost new.

Q. —you mean it would cost that if you had to buy it?

A. Yes, sir.

Q. Today?

A. Yes, sir.

Q. If you had to sell it to a customer who reasonably wanted to use it, could you sell it for that amount?

A. That I could not say.

Q. In your opinion, could you?

A. I say, I could not say.

Q. If you were representing a buyer as a valuation expert and it was something he could reasonably use in his business, would you place that value on it?

A. I could not say that, unless I knew what he wanted to use it for.

Q. For something to which that power would be devoted.

A. That is too indefinite.

Q. For instance, running an electric appliance, a water wheel for furnishing electric power.

A. I might easily pay that. I can conceive that I might easily pay that.

Q. (By Commissioner Osborne.) You mean to say if it were new and in shape.

A. Your Honor, we are talking about the water rights, the right to take water out of the stream.

Mr. Miller: That is the right given by a certain deed which they referred to, to take water from Union Lake Pond of a specified amount. He says it is worth twenty thousand dollars.

Q. How did you arrive at that?

A. That is what the company paid for it and that is the value which we had in our 1920 report which was approved by the Board.

Q. Did you consider the use it was making of it as a practical matter?

A. Do you mean did we analyze it?

Q. Did you consider it was making a certain amount, generating a certain amount of electricity for which it was getting some money, a certain amount of money and that it was utilizing that in lieu of fuel?

A. Yes, sir, we considered that, but we did not make a detailed estimate to show or indicate what the savings to the company are through such operation.

Q. Would the cost of the fuel be a fair measure, the difference between that and the cost of fuel to generate the same amount of electricity, be a fair measure of its value?

A. It would be a theoretical consideration as to what to compare it with in the way of cost, of value.

Q. It is worth just what you are able to save.

A. Yes, sir.

Q. What you are able to save is the difference between the cost of generating that power by this water and the electricity by this water power and what it would cost you if you had to buy coal to run a turbine or a steam engine; isn't that what it is worth?

A. That is a measure of what it is worth, yes, sir.

Q. How would that compare with the value you fixed on it?

A. I say, we did not make that analysis, although it was made by our engineers in this previous report.

Q. Is it in the report?

A. I mean the 1920, which is in the Board's files.

Q. We can find it, we can make it ourselves.

A. Yes, sir.

Q. (By Commissioner Gnichtel.) Where did you get the twenty thousand dollars?

A. The twenty thousand dollars is the record

ed cost, that is the price they paid for it.

Q. In the deed?

A. It is in their books.

Q. (By Commissioner Osborne.) How long ago?

A. It was 1892, I think.

Q. (By Mr. Miller.) You have a group of items on page 2 marked 21, indirect or overhead costs, aggregating $48,766, which with accrued depreciation deducted left $38,418. Do you consider all these items justified in making up that aggregate?

A. Yes, sir.

Q. How about item 4, taxes and insurance, that is $4,712; what does that mean?

A. That is taxes that the company would have to pay, property taxes mostly, during the construction period and the insurance it would take out on its property, we estimate it would cost that amount of money.

Q. Engineering and superintendence, eighteen thousand dollars, do you think that is justified?

A. Yes, sir.

Q. Suppose they did not spend that amount of money?

A. We do not see how they could get by without spending that amount of money if they were going to build the property new.

Q. Didn't you have their books? This plant down there was built by Mr. Franklin, wasn't it? You knew the history of it.

A. I don't know it was built by Mr. Franklin.

Q. Under his direction, wasn't it?

A. Yes, I understand it was.

Q. There were no charges for engineering and superintendence, were there?

A. There may not have been any charges as such on the books.

Q. (By Commissioner Osborne.) Did you take into consideration the character of the plant when

you made that estimate?

A. Yes, sir.

Q. The character and location of the buildings?

A. Yes, sir.

Q. Did you base it on what you thought it would cost or what you thought was a fair estimate, from your experience in other cases?

A. A fair estimate of what we thought it would cost for engineering service.

Q. On that particular plant?

A. On that particular plant.

Q. What percentage was it?

A. Six per cent. of the cost of labor and material.

Q. (By Mr. Miller.) A large part of this plant, that is to say, at least the street lighting distribution system, was built according to engineering plans prepared by the City's engineers, wasn't it?

A. Yes, sir. But, Mr. Miller, we are making an estimate here of what it would cost to reproduce this property, to build it new, regardless of how it was actually constructed.

Q. You told his Honor you were acquainted with the history of this particular plant.

A. Yes, sir.

Q. Since you know from the history of this particular plant that the most valuable engineering work was done by the City's engineers, why do you still introduce in your estimate some academic figures of what it might have been?

A. I do not understand that his Honor asked me if I considered the history of this plant in determining the six per cent. for engineering. I understood him to say, did you consider this particular plant, the character of its layout.

Commissioner Osborne: The character of the plant. I look on these pictures and wonder.

Q. You do not mean you find from the books any engineering cost of $18,847, do you?

A. No, sir.

Q. That is merely an estimate of what engineering would have cost if a particular plant had been located at this particular place at the time this was built.

A. No, sir, I do not.

Q. What do you mean?

Commissioner Osborne: He says if this plant were erected at this time that would be a fair estimate of the engineering cost; is that right?

Witness: Yes, sir.

Q. (By Commissioner Osborne.) Did you find in the record any definite figures as to cost of engineering and so forth?

A. No, sir, we did not analyze these records from that point of view.

Q. (By Mr. Miller.) Where did you get the loss of interest amounting to twelve thousand dollars?

A. That was an estimate of the loss of interest during the construction period which was assumed as one year; it would take one year to build the property. A seven per cent. rate for interest; that would make an average rate on the entire property of three and one-half per cent.

Q. All of this $48,766 is based on estimates of what it would cost today for those items?

A. Yes, sir.

Q. Those figures do not reflect an actual expenditure of forty-eight thousand dollars?

A. No, sir.

Q. Now, that makes up, the fifty thousand dollars for going concern value, the twenty thousand dollars for water power and about fifty-one thousand dollars for the cost of the steam plant, plus the forty-eight thousand dollars of general overhead items, makes up about one hundred and sixty-nine

thousand dollars or one hundred and seventy thousand dollars; those are the items in which you differ from Professor Temple, aren't they?

A. I would not say, Mr. Miller, that those are the items in which I differ from Professor Temple, because I do not know what overheads he has assigned or he has estimated.

Q. By overheads you mean the items containing—

A. Indirect or overhead costs.

Q. Table 21 on page 2?

A. Yes, sir.

RE-DIRECT-EXAMINATION

By Mr. Starr:

Q. Mr. Martz, in your conferences with the other engineers, was the question of the service of this company for lighting the streets discussed?

A. Yes, sir.

Q. What happened in respect to that?

A. The conference took up the question of the operating cost in connection with utilization and the City's representative contended that they were too high. We had understood from the company that they had difficulty in meeting the requirements of the City with respect to their lighting service, and so we suggested that a representative of the company attend one of the conferences and state their position, and Mr. Buell did appear at the conference and he explained that at the time the contract was entered into with the City they installed the lamps that were called for in the specifications, by commercial sizes and that they were continually being penalized by the City for not rendering adequate service, and as a last resort they began installing higher candle power lamps and after they had increased the candle power of these lamps for about twenty-five or thirty per cent., they were able to

give satisfactory service and had no more complaints. We answered the City's representative then by saying, if he would agree—if the company would install the commercial sizes of lights that are called for in the specifications, if he would agree to go down there and test them and determine whether or not they would meet the specification requirements with respect to performance; if he would do that we could go along and make a further analysis of these operating expenses in connection with those lights because it might be that the company was giving more service than was required by the specifications, and that was not agreed and therefore the subject was dropped.

Q. (By Mr. Betts.) Did you make the inventory of this property?

A. No, sir, not personally.

Q. Have you been over the hydro-electric plant itself, in detail?

A. I have been down there. Do you mean have I been on the ground?

Q. Did you look it over in detail? Are there any other water wheels there than these two wheels referred to in the inventory?

A. The Water Company has a wheel there.

Q. Is it in operation?

A. Yes, sir.

Q. Did you see it in operation?

A. Yes, sir.

Q. When was that?

A. That was about a week or ten days ago. I was down there with Professor Temple; we were down in the plant and it was driving the pump.

Q. It was running a pump at the time?

A. Yes, sir.

Q. Were any other pumps operated at the time?

A. No, I think not. One water driven pump was operating that day.

Q. That is entirely in addition to the two wheels that are mentioned in this inventory?

A. Yes, sir.

Q. Do you know what size that was?

A. No, I do not recall. I cannot tell you the size of that.

Q. Did you go over the town at all in connection with the distribution system?

A. Yes, sir, I have been over the town.

Q. How much of the town is covered by the distribution system?

A. I would say it is very well covered by the distribution system.

Q. It is now?

A. Yes, sir.

Q. Is much of it new?

A. There is quite a bit of it that has been built in the last three or four years.

Q. Was there much of the City that is not covered by distribution lines?

A. I do not believe I could answer that from my own knowledge. I would say from an examination of the map on which the lines have been plotted that it is very well covered.

G. L. DeHuff, sworn on behalf of Millville Electric Light Company.

DIRECT EXAMINATION

By Mr. Starr:

Q. Mr. DeHuff, Exhibit P-30, A, B and C, which show the salary account of the officers and office help of the various companies were prepared by you, were they not?

A. Yes, sir.

Q. Did you make the different allocation of the salaries to the different companies?

A. No, sir.

Q. Who did that?

A. Mr. Franklin.

Q. Are you the bookkeeper of the Electric Light Company?

A. Yes, sir.

Q. How long have you been the bookkeeper?

A. Since 1911.

Q. From 1915 to 1921, did you make a statement from the books of the company showing the construction work by the High Pressure Company as divided between the Gas Company, Water Company, Electric Light Company and other construction?

A. I did.

Q. And also of the business done annually by the High Pressure Company with respect to the construction and the other business?

A. I have.

Q. Is this which I now show you a correct abstract of the books?

A. It is.

Q. Showing the distribution?

A. Yes, sir.

Mr. Starr: I offer that in evidence.

(Statement showing construction work by High Pressure Company for Gas Company, Water Company, Electric Light Company, 1915 to 1921, received and marked Exhibit R-12.)

Q. Did you also make an estimate from the books of the High Pressure Company showing the gain or loss with respect to its operations for work done for the Electric Light Company, the Gas and Water Company?

A. Yes, sir.

Q. Is this such a statement taken from the books?

A. Yes, sir.

Q. Accurate, is it?
A. It is.

Mr. Starr: I offer that in evidence.

(Statement showing gain or loss of High Pressure Company on work done for Electric Light Company and Gas and Water Company, received and marked Exhibit R-13.)

Q. Did you also make a statement showing the history of the bills payable of the Electric Light Company up to and including 1921, and also the changes in 1922?
A. Yes, sir.
Q. Is this statement which I now show you an accurate statement of what the books show with reference to the history of those notes?
A. It is.

Mr. Starr: I offer those two papers in evidence.

(Statement showing history of bills, payable, received and marked Exhibit R-14.)

Mr. Starr: The Commission desires to have the history of these notes which Mr. Wood holds. I had Mr. DeHuff make an investigation and one sheet shows up to and including 1921 and the other sheeet shows the changes in 1922.

Witness: And that of 1921 has previously been presented.

Mr. Starr: The other side wanted them and we promised to furnish those.

Mr. Miller: That is High Pressure, of course.

Mr. Starr: No. These are notes of the Elec-

tric Light Company. That is what you wanted.

Mr. Miller: Given originally to the High Pressure Construction Company.

Mr. Starr: Yes.

Mr. Miller: That is what we were talking about, when you were talking about how much it cost to build the plant.

Q. Have you made a statement of the result of the municipal lighting operation of the year 1921 and 1922?

A. Yes, sir.

Q. Showing the revenue and the expenses, is that right, utilization expense you called it.

A. Utilization expense plus interest.

Q. Is that an accurate statement showing the result of the dealings between the Electric Light Company and the municipality covering those two years?

A. Yes, sir.

(Statement showing result of municipal lighting operation, 1921 and 1922, received and marked Exhibit R-15.)

Q. Have you also made a comparative statement of operation and income of the Electric Light Company for 1922 and 1921?

A. I have.

Q. Does that statement accurately show the result as taken from the books of the company?

A. Yes, sir.

Mr. Starr: I offer that in evidence.

(Comparative statement of operation and income of Electric Light Company, 1921 and 1922, received and marked Exhibit R-16.)

Q. Have you also made a statement showing the operations from 1891 to 1922, covering the operating revenue, operating expenses, operating income, net change in surplus, dividends, amortization, and so forth?

A. I have.

Q. Is that shown on the paper which you now have in your hand?

A. Yes, sir.

Q. Are those figures taken from the books of the company?

A. They are.

Mr. Starr: I offer that in evidence.

(Statement showing operation from 1891 to 1922, received and marked Exhibit R-17.)

CROSS-EXAMINATION

By Mr. Miller:

Q. Mr. DeHuff, there were outstanding on December 31, 1921, $277,399.52 of notes, is that right, notes of the Millville Electric Light Company?

A. At the close of December 31, 1921, $277,399.52.

Q. Those were notes which were either original notes or renewals of notes that had been given a number of years previously to the High Pressure Company, weren't they?

A. Well, not exactly. They originated with the High Pressure Company, that is they were notes originally given to the High Pressure Company.

Q. For construction work?

A. For construction work.

Q. That is all I want to know, how they originated, when this work was undertaken.

A. I think I should say further in connection with that that these notes at the suggestion of the

Commission about two years ago were changed around and made direct to Walter Wood.

Q. But they originated I say—

A. They originated.

Q. —by being issued to the High Pressure Construction Company.

A. Yes.

Q. When the work for which those notes were given was undertaken, or before it was undertaken, did the Millville Electric Light Company obtain the permission of this Commission for the addition to its line and the extension of its system?

A. I don't know.

Commissioner Osborne: Originally?

Mr. Miller: Originally.

Commissioner Osborne: How long ago was that?

Mr. Miller: 1916.

Witness: 1915 the work was started.

Q. You have been bookkeeper for a number of years, haven't you?

A. Yes, sir.

Q. Do you know of any authority that this company has for the issue of any permanent or long term notes?

A. I would not necessarily know of it.

Q. You don't know of any, do you?

A. I don't know of any.

Q. How long have these notes been running, in a general way?

A. Four, five years.

Q. Since 1916, Mr. DeHuff?

A. No, these notes have been running since January 1st, 1921, all of these—

Q. How about the notes which they took up?

A. None of them are later than that.

Q. How about the notes which they took up; when did they originate?

A. They originated two, three years prior to that time; two, three or four years prior to that time.

Q. What years, can you state, Mr. DeHuff?

A. I cannot tell you definitely, no, but they were within those four or five—three or four or five years.

Q. Three, four or five years. Are you Secretary of the Company?

A. I am not.

Q. You are the financial officer of it, aren't you?

A. I am no officer of the company.

Q. Do you know of any provision that was made at the time of the issue to take care of these notes originally?

A. I have not heard of any. I would not necessarily know, either.

Q. (By Mr. Starr.) Were those notes term notes or demand notes?

A. Demand notes.

Q. All demand notes?

A. All demand notes.

Mr. Miller: That was the point we raised, that they were issuing permanent obligations without authority. Of course that may or may not be. I just want the record straight on that.

Commissioner Osborne: Perhaps they have become permanent because of their inability to take them.

Mr. Miller: It is a most important thing, because if you can do that, certainly it is an unnecessary burden for a corporation to come here and get authority.

Commissioner Osborne: The only reason the law places the necessity—makes it necessary

for a corporation to come here and get authority is to protect the public from the issuance of watered securities. In this case, if these are all held by Mr. Wood or some individual it does not matter much whether they come or do not come; there is nobody to be protected.

Mr. Starr: These notes were all made to the High Pressure Company. When we had the Gas Company rate case, these notes were held by the different corporations and the Commission suggested that there ought to be an entirely new shuffle so far as the notes were concerned. They were all then taken out of the treasuries of the various corporations and are now held by Mr. Wood. It was the suggestion of the Commission.

Commissioner Osborne: He took up all of the notes.

Mr. Starr: He took up all the notes. Now he holds the notes instead of the High Pressure Company and the Gas Company and the Water Company and the Electric Light Company.

Q. (By Mr. Miller.) These notes represent, do they not, the profit that accrued on the High Pressure, at whatever percentage was allowed in the transaction.

A. No, I would not say they represent that, because that would be an enormous profit, two hundred thousand dollars profit.

Q. They include it then?

A, They include any profit that was there, of course.

Mr. Miller: That was testified to by Mr. Carver, what the profit was.

Mr. Starr: No dispute about that at all; whatever profit there was is included in the notes.

S. J. Franklin, recalled on behalf of the Millville Electric Light Company.

DIRECT EXAMINATION

By Mr. Starr:

Mr. Starr: One thing I will have to ask you to furnish the Commission. I find I have not here an accurate schedule of the character of the lamps in service, which have been furnished by the Company to the City during the last two years. I will have to ask leave to supplement that by sending a list to Mr. Miller; that is the number of lamps and the size.

Mr. Miller: I might say to your Honor, by way of explanation—it has been brought out but not in a way to make it pointed, that the Electric Light Company claim to have furnished to the City on this distributing system, lamps of a size not called for by the contract. I think your Honor heard that testimony a few moments ago. Just how that will work out I do not know, if your Honor please. If they are going to attempt to include an allocation of profit based on the supply of that size of lamp I can only say that Professor Temple makes a monthly report to the City protesting against the unnecessarily large lamps.

Mr. Starr: I think if you got the service you ought to pay for it.

Commissioner Osborne: Is it more than they contracted for?

Mr. Starr: Oh, no, there is no contract in existence now.

Mr. Miller: The light contract did provide for a specified lamp.

Mr. Starr: These lamps have been furnished since the expiration of that contract.

Mr. Miller: The testimony went in a few moments ago to the effect that whenever they attempted to furnish service through the specified lamps that Professor Temple made a report showing they were not up to standard and in order to get them up to standard they gave too big a lamp.

Commissioner Osborne: As I gathered, the specified lamps are not sufficiently efficient to bring the service up to standard.

Mr. Starr: That is the point absolutely.

Commissioner Osborne: Therefore they had to put in a larger lamp than called for in order to get the service up to standard.

Mr. Miller: That is what was said. I would not concede that, of course.

Mr. Starr: There were two specifications, the lamp by size and number, commercial size; then there was a provision that that lamp should perform a certain way and that lamp would not perform that way.

Mr. Miller: If you do not clean them.

Commissioner Osborne: We do not want any conflict like that in the new rate.

Mr. Miller: That is just the point. You say you will furnish a list of what?

Mr. Starr: First, I have here the contract, I will introduce that in evidence, then we will introduce and furnish a list of what we have supplied since that time.

Commissioner Osborne: We are not interested in the past, are we, in that respect?

Mr. Betts: We want a copy of that contract, because there has always been a dispute as to the proper method of interpreting that contract, one with which I have never agreed, although I was not in that controversy.

Commissioner Osborne: We are not going to make a new contract.

Mr. Starr: No, but we are going to furnish the Board with information as to the old contract and then the information as to what we were actually serving in the way of the size of the lamps, number of lamps, and so forth.

Commissioner Osborne: You want to furnish information as to what you are willing to serve at a certain rate, what you say will give the service they require.

Mr. Miller: If they give us big lamps we do not want them. If they give us the other and they perform, that is all right.

Commissioner Osborne: There ought not to be two standards; either a performance standard or a lamp standard.

Mr. Miller: We have lamps that must perform up to a certian standard and they are tested every month. The contract lamps are the ones that ought to receive the consideration of the Board, I think.

Mr. Starr: Then you cannot possibly have the performance specified in the contract.

Mr. Miller: They did perform month after month.

Commissioner Osborne: You want the rate fixed on the contract lamps.

Mr. Miller: Yes, sir. I think I am bound by that.

Commissioner Osborne: Whatever they perform, that is up to you.

Mr. Miller: They perform all right.

Commissioner Osborne: If that is the lamp you select you will have to take the performance.

Mr. Miller: Of course their contract will require they meet a certain test. If they are clean, they will be up all right.

Q. (By Mr. Starr.) I show what purports to be the contract that has been spoken of as the 1915 contract with the company; is that it?

A. That is the 1915 contract with the City of Millville.

Mr. Starr: I offer that in evidence.

(1915 contract between City of Millville and Millville Electric Light Company, received and marked Exhibit R-18.)

Mr. Starr: We will take the original and furnish copies.

Q. I also show what purports to be the instructions to bidders, specifications, contracts, bonds and so forth, with reference to the proposal which was made in 1921. Is that such a paper that was furnished by the City when they invited bids in 1921?

Mr. Miller: I object to it on the ground that the proposal was never accepted; that has no force at all touching any controversy.

A. This is the proposition that we gave the City in 1921 for the new contract.

Mr. Miller: I would like a ruling on that.

Commissioner Osborne: We do not see how

it has any bearing on this proceeding if they submitted a proposal which was never accepted.

Mr. Starr: Not in the sense of creating any contractional relations. I propose to ask Mr. Franklin whether or not he is willing to supply to the City the service which was contained in the proposal.

Commissioner Osborne: That is a different thing. If you want to simply show him a piece of paper and ask him whether he is willing to do something.

Mr. Miller: That would not be binding, that could not bind the City.

Commissioner Osborne: It would not bind anybody, of course.

Mr. Miller: I do not see how it would be of use in fixing a rate.

Mr. Starr: It is the character of service the City wants the Board to fix the value of.

Mr. Miller: No.

Mr. Starr: Yes, it is; it is your own proposal.

Mr. Miller: If it is merely to show what was invited by the City that is one thing, but his proposal is to do something else.

Commissioner Osborne: We are not interested in his proposal to do something else.

Mr. Miller: We called for bids to do exactly what had been done for five years; they put in a proposal to do something else.

Q. (By Mr. Starr.) Is that a fact, Mr. Franklin?

A. That is what they called for bids on and that is what we furnished them in 1921.

Q. And your proposal was in accordance with their invitation?

A. Yes, sir.

Q. Without any change so far as you were concerned?

A. Yes, sir. It was a double proposal there, the same thing, an extra lamp both lamps.

Commissioner Osborne: I do not see how it is going to be helpful to us any way. If I had to decide this case today I probably would not look at that. We are trying to fix a rate on the value of the service that these people can use.

Mr. Starr: Doesn't the Commission desire to know the character of service the City desires to have?

Commissioner Osborne: No; let them put in their evidence as to what they desire to have. They put that in as part of their case. But you go back to a proposal some years ago as indicating what they desire to have now. I cannot see it has anything to do with this situation. The question is not what they wanted five years ago. They may have changed their minds.

Q. (By Mr. Starr.) At one of the hearings you were requested to make a comparison of the current for November, 1922, at the switchboard purchased from the bleachery current compared with the current generated in the steam plant, have you made such a comparison?

A. Yes, sir.

Q. Is that it (indicating)?

A. Yes, sir, it is.

Mr. Starr: I offer that in evidence.

(Comparison of current for November, 1922, purchased from the bleachery and

generated in steam plant received and marked Exhibit R-19.)

Q. Did you make an investigation of the rate in Millville, Bridgeton, Vineland, Wildwood, Cape May and Hammonton covering street lights, commercial and power?

A. It was not a comparison of the rates.

Q. Comparative electric data.

A. It was a comparison of the amount sold in each one of those towns and the cost that it cost them to produce it.

Q. (By Commissioner Osborne.) By your company was it?

A. By our company and also by the company in Bridgeton, the company in Millville, the companies in Vineland, Wildwood, Cape May and Hammonton.

Q. Is that in the form of a schedule?

A. Yes.

Mr. Starr: I offer that in evidence.

(Comparative data of various companies received and marked Exhibit R-20.)

Q. I understand, Mr. Franklin, that you and Mr. Loeb do not agree with reference to the proposition of making an increased charge to the Gas Company for steam furnished by the Electric Light Company.

A. Yes, sir, that is correct.

Q. I wish you would give the Commission the benefit of your views with reference to that proposition.

A. As I understand Mr. Loeb's figures, he has taken them from the steam flow meter that was in, put in place to measure the amount of steam that the Gas Company took from the Electric Light Company, and I was not satisfied that that meter was correct. The Gas Company has their own boilers

which they can use if they see fit to and we have been alternating back and forth, using the Gas Company's boilers for a month and then using the Electric Light Company's boilers for a month.

Q. (By Commissioner Osborne.) You run both companies, as I understand it?

A. Yes. To see which boiler furnished steam to the Gas Company the cheapest. We have found by actual tests that the Gas Company's boilers, which are nothing but ordinary horizontal tubular boilers, but run to their fullest capacity, supply steam to the Gas Company with a little less coal than the Electric Light Company's boilers do when there is nothing running but the Gas Company. We go on the principle if the Gas Company and Electric Light Company were both running so the Electric Light Company's boilers would be running to capacity it would be more efficient and probably supply steam the cheapest. Our object in buying steam from the Electric Light Company was not to get it any cheaper, but to reduce the overhead of the Electric Light Company on their kilowatt send-out, but we found out that it did not do it at that time, but since we have overhauled the boilers and put in the flues and everything the way they should be in, it is running now at about an equalization point, one with the other, consequently I did not agree with Mr. Loeb that the Gas Company should pay more for the steam than what it would cost them to make it themselves.

Q. (By Commissioner Osborne.) What is your position with the Gas Company?

A. I am Manager.

Q. What is your position with the Electric Company?

A. Manager.

Q. Therefore, as Manager of the Gas Company, inasmuch as you can produce steam for as little or less than you can buy it from the Electric Company

you do not think the Gas Company ought to pay any more than it is paying now?

A. I do not.

Q. But as Manager of the Electric Company don't you think the Electric Company ought to get from the Gas Company all that it costs the Electric Company to furnish the Gas Company with steam?

A. Not including the overhead, no.

Q. Why not including the overhead?

A. Well, if the Electric Light Company is going to charge the Gas Company including that, we would not buy any steam from them.

Q. Why should the Electric Company give the Gas Company something for nothing?

A. They are not giving them something for nothing, because when the Electric Light Company boilers are running they only have to hire one set of firemen, with the Gas Company. If you run both sets of boilers you have to hire two sets of firemen, consequently it reduces the cost to the Electric Light Company of their fuel.

Q. Then at the present rate at which the Gas Company can economically and properly afford to pay, just as though it was buying it from some stranger, you think because of the saving in overhead, that it is an advantage to the Electric Company to sell its steam to the Gas Company at the present rate?

A. Yes, sir.

Q. (By Mr. Starr.) What was the cause of the last, the recent breakdown in the engine?

A. The last breakdown of the engine, the machine at the factory in Providence, Rhode Island, was not properly put together, the disc, really the crank, they pressed the pin into the crank, into the disc in the factory before they sent it to Millville. When it came there we discovered it was that way and we telegraphed them that we saw the

disc had the pin in it and asked them if we should go ahead and shrink the disc on the shaft with the pin in the disc. They said to go ahead and do it because that was the way they always had done it. We did not make the contention to them, but the contention was with us one was cast iron and the other was wrought iron and in heating it up to a red heat they would not both expand and contract alike and the result was they did not, and consequently after we started up and put the load on the pin commenced to wiggle and wear. I do not know whether you ever stopped to figure the pounds that each stroke of the engine would make with a load of that kind, but it is way up in the hundreds of thousands, and broke the disc before we could get to the engine to shut it off.

Q. (By Commissioner Osborne.) It had not been running very long then?

A. We had been running it with a load about an hour. We had run it three days, we had run the engine altogether three days, getting it settled down and tested out, but we had run it with a light load, only about 160 kilowatts for an hour when it happened.

Commissioner Osborne: Anything further, Judge?

Mr. Starr: I have nothing further.

Commissioner Osborne: Do you wish to put in any evidence as to what your requirements are?

Mr. Miller: Judge, I would like to put Professor Temple on the stand and ask only one question and that is if he has prepared a table showing his valuation of this plant, and say yes, here it is. He can put it right in.

Commissioner Osborne: Do you want to put

in the evidence suggested by Judge Starr a few moments ago, of this old proposal, which he said represented your present wishes. Do you wish to put in evidence as a basis for the fixation of a rate for street lighting?

Mr. Miller: We have that here.

Commissioner Osborne: It better go in then.

Mr. Starr: I have no objection to its going in. I tried to put it in.

Mr. Miller: He wanted to put his proposition in. We are going to show the bids we called for.

Commissioner Osborne: The objection was, it came from him as your offer. He was offering it as your requirement.

Mr. Miller: No. I told Judge Starr I did not object to his putting in our proposal, that is to say, the advertisement. I said they did not put in a bid in accordance with our advertisement.

W. E. S. Temple, recalled on behalf of the City of Millville.

DIRECT EXAMINATION

By Mr. Miller:

Q. Have you with you a form of the advertisement for proposals for electric light service which was put out in 1921?

A. No, sir, I have not.

Commissioner Osborne: Can't you gentlemen agree?

Mr. Miller: I do not want to take his proposal.

Witness: That was prepared by the company, presented by them as a substitute proposal and it was not satisfactory and has nothing to do with it.

Mr. Miller: I am willing to put in the advertisement of the City which calls for bids to supply certain current. I am not willing to put in their offer.

Mr. Starr: Here it is, circuit No. 1, location of lamps each street corner.

Commissioner Osborne: Is that all right?

Witness: No.

Mr. Starr: That is their own proposal.

Commissioner Osborne: They repudiate it.

Q. Professor Temple, have you prepared a tabular statement showing the valuation that you placed on this electric light plant?

A. Yes, sir.

Q. Will you present it, please?

A. (Witness presents exhibits).

Mr. Miller: I offer that, if your Honor please, as an exhibit, it has all of the details.

Cross-examine.

Mr. Starr: I do not propose to ask a question about it.

Witness: I have not included the steam plant.

Q. (By Commissioner Osborne.) It has everything in it that is there.

A. That I have included, yes, sir. I wish to typewrite it up.

Commissioner Osborne: He wants to take the original and submit a typewritten copy.

Mr. Miller: Certainly. This can be marked as an exhibit.

Mr. Starr: It will be the same, will it?

Witness: Oh, yes. Substantially all these prices here are quotations obtained by me and agreed to by practically everybody, except one or two.

(Valuation of plant prepared by W. E. S. Temple, received and marked Exhibit P-31.)

Witness: I wanted to explain why I did not put the steam plant in.

Commissioner Osborne: I understand you did not think it any good.

Mr. Miller: These gentlemen say this is not what the City calls for.

Mr. Starr: Let them look at it.

(Informal discussion.)

Commissioner Osborne: Suppose you furnish the other side and this Board with a duplicate copy of what you require, what you want a rate fixed on.

Mr. Miller: I think this may be it. You say this is it?

Mr. Starr: I say that is it.

Commissioner Osborne: If that is it you can furnish that. If not you can furnish us with something else within ten days. All additional data to be furnished within ten days.

(Ten days allowed for furnishing of additional data.)

(Matter taken to conference.)

BOARD OF PUBLIC UTILITY COMMISSIONERS

Trenton, N. J., Tuesday, October 2, 1923.

MILLVILLE ELECTRIC LIGHT COMPANY RATES

Before the following Commissioners:
HARRY V. OSBORNE, Esq., President,
JOSEPH F. AUTENREITH, Esq.,
FREDERICK W. GNICHTEL, Esq.

For Millville Electric Light Company appear:
S. J. FRANKLIN, Esq., and
J. J. SUMMERILL, Jr., Esq.

For the City of Millville appears:
LOUIS H. MILLER, Esq.

Mr. Miller: What is the matter that is to be brought up, if your Honor please, on that? I really do not know, and Mr. Franklin—I have been to see him and he said he did not. Mr. Summerill, do you know?

Mr. Summerill: I understand the Board wanted a representative of the Millville Electric Company in Court today, wanted to ask some questions over certain actions the company had done. Mr. Franklin is in Court to answer any questions.

Commissioner Osborne: What is the nature of the proceeding, Mr. Barber?

Mr. Barber: The Board authorized the company to file a schedule of rates to become effective from the 1st of January, 1923. In its decision the Board stated that the company at the time it made the rates effective which were

under review by the Board, had publicly announced that it would refund any amount collected in excess of what the Board found to be reasonable. The company had increased its rates at a time when there was no Commission functioning and they had gone into effect without any review by the Commission. Then the Commission took up the rate schedule and determined upon a schedule of rates which it authorized the company to charge, to be effective upon the 1st of January, 1923. Then the company applied for a writ of certiorari, which was allowed, and we received notice of that, but the first notice sent to the company to appear was prior to the time when it had filed the schedule of rates consistent with the Board's decision. Since then the schedule of rates has been filed effective September 1st. There is nothing said about any refund, and there is a very serious question as to whether the law has been complied with in applying for the writ of certiorari and whether the record is in such shape, no formal order having been issued, that it can be reviewed by the Court. It is to get discussion with the company, to straighten that out.

Commissioner Osborne: Mr. Miller, what is the company's attitude with regard to carrying out its publicly declared intention of making a refund?

Mr. Miller: I should say, from observation, that they had determined to do nothing until the Board entered an order on the decision. That is the first thing everybody has been awaiting. I do not suppose they are going to pay the rebate, because they have applied for a writ. As I understand Mr. Franklin's statement today, they propose to litigate the right

of the Court to even relate your order back to January 1st. Further, I believe, from what he said here today that he is going to take the attitude that the original rates became finally operative at the expiration of the period limited by statute—I think it was four months from the time they filed those rates, speaking from memory, which, of course, would have to refer to dates in 1921, I think they filed their last amended rate, we will say, October, 1920, so that four months from that period elapsed, I will say in February, at which time there was no Board functioning.

Commissioner Osborne: The difficulty that presents itself is purely a practical one which we want to straighten out. You are entitled, of course, to take the appeal, but the record now is not in such shape as to enable you to do so.

Mr. Miller: I am speaking for the City; we do not want to appeal.

Mr. Franklin: Can I speak just a moment, Judge?

Commissioner Osborne: Yes.

Mr. Franklin: Judge Starr tried to find out from Mr. Barber's office last Thursday whether what you handed down was a decision or just a recommendation and he could not find out. Mr. Barber was not there and the girl said she did not know, but would ask Mr. Barber or leave word for him when he came in. He called up the next morning and the girl said Mr. Barber had taken the papers with him and gone to Newark, consequently the Judge was at a loss to know what to do. He did not want to lose his right to appeal so he asked for a certi-

orari with the supposition that possibly your decision was an order.

Commissioner Osborne: Will he be here today?

Mr. Franklin: No. He is in New York State some where.

Commissioner Osborne: Some one is here representing him. You can answer the question. What is the attitude of your company to be regarding the rebating of the excessive rate charged?

Mr. Franklin: Our opinion was that when Judge Treacy decided the original hearing on the rates and said they were legal, that that settled the question of any rebating, and that you had taken it up afterwards and asked for a rebate, which was entirely on a new case.

Commissioner Osborne: Then you do not feel bound by your public declaration that you would rebate?

Mr. Franklin: We think that was decided by Judge Treacy.

Commissioner Osborne: That is your privilege, of course, to take whatever position you desire to, with regard to that.

Mr. Franklin: Let me add just one thing. You understand, Walter Wood, who is the owner of the plant, is in Europe, and what he would say he would do were he here, I don't know, I am just protecting myself.

Commissioner Osborne: You have to take the responsibility in his absence.

Mr. Franklin: Yes.

Commissioner Osborne: You say you will not voluntarily make that rebate.

Mr. Franklin: No, we would not.

Commissioner Osborne: Now, this decision which we rendered, was rendered upon the assumption that that offer of rebate was made in good faith and would be carried out. That offer was not made in the record in these proceedings, and therefore we cannot make it binding upon you in any order that we make. But the decision having been rendered upon that theory, we related the rates back to January. Under the law our order based upon that decision could not be effective for twenty days. Now, if you repudiate that offer, then a supplemental decision will undoubtedly have to be made, changing the conclusions that we reached in view of your present position, and then issue an order upon the supplemental decision or the decision as amended by the supplemental decision. Your present certiorari will not stand, because it was improvidently issued, in other words, it was not issued in accordance with the statute, it was not based upon an order and it was not based upon notice, so unless you voluntarily withdraw it our counsel will be instructed to go before the Court and have it dismissed and undoubtedly will have it dismissed, because it is not in compliance with the statute. Then we will make an order, then we will make our supplemental decision, upon which we will make an order, from which you can appeal.

Mr. Franklin: That would straighten the matter out.

Commissioner Osborne: Yes, we want to straighten the matter out.

Mr. Miller: If your Honor please, the as-

sumption would be that the rate you put in force would be less, so the public could be compensated in that way.

Commissioner Osborne: It may be when we make our supplemental decision that a different rate will be reached. I don't know; that may be so. That rate, you see, we fixed, was with the thought, upon the theory that you would relate back your rebate until last January. If that is not so, the new rate may be different.

Mr. Franklin: Mr. Summerill says Judge Starr will probably be back Thursday morning. Will that be time enough for withdrawing the certiorari?

Commissioner Osborne: Oh, yes.

Mr. Franklin: We wish to get things right, to have them straight.

Commissioner Osborne: We want to assist you in doing that.

Mr. Franklin: We will take it up with him just the minute he gets home.

Mr. Brown: Before it is put down, may I make a statement, that counsel ought to agree to accept short notice of a motion to dismiss? This writ is returnable on the eleventh.

Mr. Summerill: Judge Starr is out of the State. I think there will be no difficulty on that at all. I am not in a position to bind the Judge on it. I do not think there will be any difficulty on it.

Commissioner Osborne: Can you be ready for rehearing next Tuesday, a week from today?

Mr. Franklin: Couldn't you make it the 16th? We have to be here the 16th anyhow.

Commissioner Osborne: You do have to be here the 16th?

Mr. Franklin: Yes, the Gas Company has appealed for an issue of bonds.

Commissioner Osborne: Will that suit you, Mr. Miller?

Mr. Miller: I think so.

Commissioner Osborne: Then we will put it down for the 16th, with the understanding that both parties will be ready then.

Mr. Barber: That settles the date of hearing. There is just one point before they leave I want to bring up: The rates which the Board authorized have been put into effect, as I understand it.

Mr. Franklin: Yes, sir.

Mr. Barber: And I assume the company does not propose to depart from those rates, that is, will not insist on any technical right to charge the old rates, because this thing is reopened.

Mr. Franklin: No. The bills were made out this month at the rate we filed, exactly your rates.

Mr. Miller: I don't know about that. I don't know it is your rate.

Mr. Barber: It is our rate with one exception, that they have put in—it has been checked up—they put in a minimum charge of a dollar and ten cents less a discount of ten cents off. That is not what the Board authorized. What the board said was a minimum charge of

one dollar. There were other rates to which a discount applied, but not to the minimum. I think it ought to be changed.

Mr. Miller: It may be voluntarily they put in a lower rate. The City would like to have the Board pursue the original hearing down to a final order. We will rely upon the order rather than the generosity of the company.

Commissioner Osborne: I think that is more satisfactory. It is apparent if we fix a rate and they do something else to it, it is not the rate we fix.

Mr. Barber: What I thought was this: I did not think the company ought to leave with any misunderstanding on the part of the representatives that because of these proceedings coming up they should withdraw the rates already made effective and charge higher rates.

Commissioner Osborne: Mr. Barber's point is now, they should not feel at liberty to go back to the original rates which they had been charging.

Mr. Franklin: The bills are out and delivered.

Commissioner Osborne: The present rate should remain in effect at any rate until heard by the Board.

Mr. Franklin: Yes.

Mr. Miller: It may affect this other hearing. I am here on the original proceeding. We are going to pursue that down to an order. He may suspend that rate, he may withdraw it. His moral pledge probably would be good and I should appreciate it.

Mr. Barber: He says he won't put it off.

Mr. Miller: He says that to you.

(Adjourned until Tuesday, October 16th, 1923, at the State House, Trenton, N. J., at 11:00 o'clock A. M.)

BOARD OF PUBLIC UTILITY COMMISSIONERS

Trenton, N. J., Tuesday, October 16, 1923.

MILLVILLE ELECTRIC LIGHT COMPANY IN RE RATES CHARGED.

Before Commissioner
HARRY V. OSBORNE, Esq., President,
THOMAS BROWN, Esq., Counsel,
A. N. BARBER, Esq., Secretary.

For Millville Electric Light Company appears:
LEWIS STARR, Esq.

For the City of Millville appears:
LOUIS H. MILLER, Esq.

Commissioner Osborne: Are you ready to proceed in this matter?

Mr. Miller: We are, on the part of the City.

Commissioner Osborne: You were not here the last time?

Mr. Starr: No. I don't understand what the object of this meeting is, except that Mr. Franklin was required to be here with respect to the bills.

Commissioner Osborne: Have you read the record?

Mr. Starr: Yes, sir, I have.

Commissioner Osborne: Couldn't you gather from that what the point was?

Mr. Starr: I understood we were to have a

day fixed if the Commission desired to take further testimony.

Commissioner Osborne: This is the day.

I understand the situation to be that the company desires to appeal from the decision of the Board and that, pursuant to that desire—which, of course, is an entirely proper one; that is agreed without question—they took a writ of certiorari, but that the writ was improperly issued in that the statutory requirements preliminary to the taking of the writ were not complied with, and that that has since been dismissed, so that leaves us in the situation we were in when the decision was handed down.

My recollection is that in this decision reference was made to an offer of the company—not in these proceedings, but I think by a public advertisement—that inasmuch as these rates which have been in effect were put in effect during the interval of time when there was no Board sitting, that they would make restitution for any excess over and above the amount found by the Board. The Board assumes, of course, that the company would comply with that statement and do as it said it would do, and on that assumption merely made these rates retroactive, not for the full period they had been in existence, however, but to last January, and based the rates on that theory. The company now says, according to Mr. Franklin, that they are not willing to abide by their public statement to the effect that they would rebate the difference between what the Board now finds and what they have been charging, and in view of the fact that they offered to do so, if not in these proceedings, I take it that the

company is not bound by it, so that brings us to the position where, if an order is to be entered on this decision, which the company has a perfect right to insist upon, the proceedings will have to be reopened and a new or supplemental decision rendered in conformity with the company's present attitude in respect to the rebate, because we cannot make an order on the decision as it now stands with that assumption in it that this rebate would be made, there being nothing in the record to sustain it, and so the matter was put on two or three weeks ago for the purpose of a rehearing.

Mr. Starr: I think your Honor is mistaken about that; that isn't my understanding of what the communication said.

Commissioner Osborne: We will see what the notice was.

Mr. Miller: Is it necessary that a motion be made to open the hearing?

Commissioner Osborne: No, we will open it of our own volition, if necessary; we are not bound by any strict rules of procedure; we will attempt to do the thing that ought to be done, regardless of the method by which it is done.

Mr. Barber, can you find in the file here the notice which brought this on, if there was one? I don't know whether it was by informal communication or by notice.

Mr. Miller: It was in the shape of a letter; I received a copy and it was cited in that that the company had been sent a copy.

Commissioner Osborne: When the Board received information of the company's attitude, this situation became apparent. Of course, the

Board realized that no order could be made on this decision and it wasn't contemplated when the decision was made that an order would be necessary, because it was assumed that the company would acquiesce in the rates found by the Board, it having stated that it would do so, but the company not being willing to do so, made necessary the reopening of the matter, and a communication was sent, under date of September 25th, requesting the representative of the company to appear before the Board on Tuesday, October 2nd, and the company did appear then and the matter was taken up and discussed—the city also appeared, the municipality—and the position of the Board attempted to be made clear at that time. You were not here, Judge Starr; someone was here from your office, Mr. Franklin, and owing to your absence the matter was laid over until last week and again last week until today.

Mr. Miller: I think it was fixed for today at that time, your Honor.

Commissioner Osborne: Two weeks ago?

Mr. Miller: Yes.

Commissioner Osborne: Then the matter wasn't laid over last week, but it was laid over until today two weeks ago. All we have to do now is to clarify the situation in order to lay a foundation for a supplemental decision so that an order may be issued.

Mr. Starr: I was not here two weeks ago today and I didn't understand at that time that there was any question to be raised with reference to the necessity for a supplemental order, based upon what Mr. Franklin said was the attitude of the company respecting the suggestion that a rebate should be made.

That meeting of two weeks ago came about in this way, as I explained in the letter that was sent to Mr. Barber:

The decision came to my office while I was away on my vacation in the latter part of August; my assistant didn't think there was any necessity for sending it to Millville, so it wasn't sent. Mr. Franklin communicated with my office, however, and immediately upon request coming from him the decision was sent to Millville. The bills for August had then been made out and they were made out under the old rate. When I returned I had a letter from Mr. Miller suggesting the fact that the bills be made out under the new rate; he said that he had communicated with Mr. Barber. I then received a letter from Mr. Barber requesting an explanation of why the bills for September, or rather the bills sent out the first of September, were not under the new rate and why they were under the old rate. That explanation was sent immediately as soon as I received the communication from Mr. Franklin. And then the next communication I had was from Mr. Barber under date of September 25th, 1923, as follows: "Your letter of the 21st instant, with copy of letter written by Mr. Franklin to you, were brought before the Board at its meeting today. The Board instructs me to inform you that it is not satisfied with the company's action upon the decision filed by the Board on the 22nd of August and desires a representative of the company with authority to speak for it to appear before the Board at its meeting to be held at the State House, Trenton, on Tuesday, October 2nd, 11:00 A. M."

Certainly we had a right to assume under that communication that the only question that

was to come before the Board was the action of the company under the decision in sending out the August bills under the old rate and not under the new rate. There is no suggestion there that there was to be any rehearing based upon a desire to have the Board incorporate in the record any matter connected with the rebate; in fact, there hasn't been a suggestion that it applied to the rebate until the decision of your Honor was filed in the latter part of August.

Now, at the meeting on the 2nd, called for the purpose of investigating the reason for sending out the August bills under the old rate, I think your Honor asked Mr. Franklin what his attitude was with respect to the rebate. Then the question of the rebate was raised and that hearing was adjourned until today. Now, I didn't understand from the correspondence or from the record itself, that there was any testimony to be taken today. My understanding of it was, and I understood that from my conversation with Senator Brown, that we were to be here today, the writ being out of the way, and that a day was to be fixed for a hearing. I am not prepared to offer any testimony today.

Commissioner Osborne: It may not be necessary to offer any. What we are trying to do now is to put this record in such shape as to enable you to make your appeal.

Mr. Starr: I understood the case was to be reopened.

Commissioner Osborne: It may be reopened without the taking of testimony; the parties may come in and admit anything that is necessary to perfect the record. What we want to do is get whatever is necessary to put the record in

proper shape upon which we can base an order that you can appeal from.

Mr. Barber: May I be permitted to make this suggestion: In the first place, the letter that was sent to Mr. Starr, stating the Board was not satisfied with the way in which the company had made its decision, at that time the company had not filed with the Board the schedule of rates which were fixed by the Board in the decision. That was one point that was in mind when the company was asked to appear before the Board. The company, after the receipt of that letter, however, did file a rate schedule, but there had been no reference to the rebates or refunds to be made from the 1st of January. It seemed to be apparent that if the Board determined that a certain schedule of rates was a reasonable schedule for the company to charge and in fixing that schedule had in view that the schedule should go back to the 1st of January, that a schedule which did not contemplate that might have to be a lower schedule, because the company from the 1st of January up until the time when the new schedule became effective, if it was finally sustained, would, of course, be in receipt of revenues which the Board did not contemplate the company should receive.

Now, it would seem as though the matter might be adjusted in this way, if it were acceptable to the company: if the company would stipulate that the rate schedule might become effective, as it is now, from the 1st of January, subject to an appeal to the Court, and agree that if the rate schedule as fixed by the Board should be upheld they would make refunds from the 1st of January up until the time when the rate schedule became effective, that the Board might

issue an order putting the rate schedule into effect subject to such a stipulation, and that would save, apparently, if that could be brought about, the taking of any additional testimony and the determination of what amount of money would be saved by the company and what schedule of rates lower than that in existence, if it should be determined that that would be reasonable, should be fixed. I don't know whether that could be brought about or not, but it would seem to be the practical way to deal with the situation and avoid what might otherwise have to follow, that is, the putting into effect of a schedule of rates for a certain period while this amount of money, from the 1st of January up until the 1st of September, say, was being paid out, and that would involve, perhaps, a change of rates again to some other basis and, of course, frequent changes in rates are not very desirable if they can be avoided.

Commissioner Osborne: What is your attitude with respect to this matter, Mr. Starr?

Mr. Starr: In what respect?

Commissioner Osborne: Well, does the company intend to put into effect the rates as indicated in the Board's order and in the manner as indicated in the Board's order?

Mr. Starr: The rates have been filed; the original rate was filed shortly after the 1st of September.

Commissioner Osborne: That is, the rate fixed by the Board?

Mr. Starr: With the exception that there was a modification which didn't seem to be material. Your minimum on a certain class was $1.00; they made it $1.10 with a rebate of $.10,

which was substantially the same, but when Mr. Franklin advised me there was some criticism with respect to that modification a couple of weeks ago, I immediately suggested the new rate be fixed in exact accordance with the decision of the Board, so that that rate has been filed, and that is the rate that is now in effect.

Commissioner Osborne: It should be fixed in accordance with the decision.

Mr. Starr: I don't know how that came about, but I assume that they assumed that it was substantially the same thing, but the rate now filed and the rate which is in effect under which current is being furnished is in exact accord with the schedule permitted to be filed by the decision.

Commissioner Osborne: What is the company's attitude with regard to that aspect of it—you say those rates were based upon the theory—

Mr. Starr: I don't see how, without taking an exception to the finding—There was no suggestion in the rate case by testimony or otherwise that the arrangement for a rebate had any effect upon this hearing; it isn't in the testimony, it isn't in the records and it wasn't injected into the case as I understand it, until the decision came down making the rates retroactive.

Mr. Miller: I direct Judge Starr's attention to the record, the first hearing, when I offered all the testimony taken at the original hearings in the fall of 1921; I put them all in; they are here and you will find on file documents showing that Mr. Franklin's company did offer to the public this rebate.

Commissioner Osborne: There is no question about that.

Mr. Starr: My recollection is to the contrary. Of course, I may be wrong, but there was no suggestion in the hearings before your Honor that that arrangement should have any effect upon this rate, and it was first, as I said before, injected into the proceedings in the decision that was filed.

Commissioner Osborne: Let us assume that is so. If that is so and this Board, upon the assumption that the company would keep its word, fixed the rate with that in view, then the question arises whether the company, having repudiated that agreement with the public, whether this rate schedule can stand or whether it will have to be revised to take care of that.

Mr. Starr: That is entirely a matter for the Board to determine. There has been no repudiation, it seems to me, because that advertisement or that promise was made at a time when there was grave doubt as to whether the company had a right to put the schedule into effect because of the transition of the Board.

Commissioner Osborne: It was nevertheless made.

Mr. Starr: It was made for the purpose of a rebate being provided for in case it was determined that the company had no right to put that rate into effect.

Mr. Miller: Oh, no.

Mr. Starr: I say that was the purpose of that advertisement. The receipts were given based upon that.

Commissioner Osborne: You mean that

was the purpose expressed in the advertisement or the purpose in the back of the minds of the company?

Mr. Starr: It was the purpose expressed in the advertisement, whether they had the legal right to put this rate into effect or not. The rate was filed and at the suggestion of the municipality a hearing was called in Vineland to determine whether or not there should be any investigation as to those rates. Mr. Miller did not appear. At that time there were proceedings pending in the Court of Chancery with reference to the rates, with the idea the Commission's other rates would be restrained by an injunction. Finally that bill was dismissed. Then the matter came before this present Board some time, I think, in October and Judge Treacy held that the company had the legal right to put those rates into effect and he stated that they had initiated an investigation on their own behalf on their own motion, with respect to the adjustment of those rates.

The company has assumed and I think Mr. Miller has assumed that the promise to rebate ended when there had been a determination by Judge Treacy that those rates were legally in effect, and that has been the attitude of the company all along.

Mr. Miller: Judge Starr still begs the question. Your Honor in your decision refers to this promise; it was stated there that the consumers were to receive this rebate; that was made part of your decision in fixing the rates. What we are talking about now is fixing the rates. It may be, as the Judge says that you have no right to consider that. I will grant that, for the purpose of this argument, that your Honor

had no right to consider that, but you did consider it in fixing the rates, and therefore, on the assumption that the consumers were going to receive back part of the money you fixed a higher rate than you otherwise would. That seems to me to be perfectly clear. It seems to me that that is so, whether or not your Honors are right in alluding to the point in your decision. I understand your Honor to say now that you should not have done it. Your Honor perhaps cannot make an order that will date back to January 1st, but you are saying now to the company, nevertheless, in fixing your rate we pointed to your promise and we relied on your promise and we fixed a higher rate; now that we know you are not going to live up to or keep your promise we are going to fix a new rate according to what must be the final pronouncement and judgment of the Board. The necessary inference is that perhaps your Honors will now fix a temporary rate, running over a period of time, and I should say that that time ought not to be limited to the eight months indicated in your decision; I was surprised that your Honors did not go back to the date when their rates became effective.

So I would say this to your Honors: Revise your decision; it is not necessary to take any additional testimony; you have all the facts before you; you have on the record the declaration of the company that they are not going to rebate and you have your own expression on the record, your intention of granting to the people of Millville justice by in some effective way restoring to them money that has been taken from their pockets by a certain set of circumstances, to-wit, the absence of a Board of Public Utility Commissioners in fixing

a new rate, and to effect that purpose, your Honor, I should say ought to reduce the rate at least for a period that will go so far into the future as the date when that unjust rate became effective, has been in force. That would be, say, for two years, and at that time your Honor should say that unless some application is made, then this rate that you have indicated by your decision might go in force, or we might be brought back here some time ahead. But that, it seems to me, would be doing justice and we wouldn't rely—the people of Millville, if your Honor please—I am not talking to Mr. Franklin; his word personally may be good and may not be good; that has nothing to do with the case— but the people of Millville would not be satisfied with the pledge or promise or solemn covenant of the company to make that rebate in the face of the declaration made on the record the other day, published, broadcasted in the newspapers, when this company announced that it intended positively not to make this rebate; they would not be satisfied—the people of the City of Millville, I say, would not be satisfied. I want an order of this Board that will insure to these people a rebate; I want to proceed along the lines your Honor announced two weeks ago; that is what I want, and that can be done.

I would like to refer to this so-called rate that has been filed. I should say to Judge Starr that he has no right to appear in this proceeding and file a new rate; I should call that—well, I wouldn't want to say an insolent proceeding, but a cunning proceeding. What right has he? Is it true, if your Honor please, that you can spend your time and the time of the officials of this Board in attempting to fix

a new rate, and have you proceed to final judgment, and then that these people can come in and ball up your proceeding, challenge your proceeding so that there must be a new hearing ad infinitum, and so on? I don't think so. I should say this new rate filed here—because there is pending the question of rates and because your Honor is about to make a definitive order of the Board—is a nugatory proceeding. Of course, we all knew what was intended. Here was a writ of certiorari that would hold this other matter in the Courts for a long period of time, then they would have filed this new rate so there wouldn't be too much of an outcry, I suppose, and meanwhile they would run off with the profits represented by the rebate and running into thousands of dollars; that is the reason they filed it then, and the reason they would like to stick to it now is to still confuse your record.

My attitude is the one I declared two weeks ago; we rely on the order of this Board; we pay no attention to their process of filing rates, their statements, promises or covenants, and we ask your Honor to proceed as you indicated two weeks ago, that is was probable the Board would do, to hand down a supplemental decision in which a rate shall be indicated disassociated from their promise of a rebate and founded on the thought in the way your Honor indicated, that the people of the City of Millville shall receive, substantially effective, the rate out of which they probably will be cheated unless your Honor takes that action.

Mr. Brown: May I address the Commission on the points that have been referred to?

The point in regard to Judge Starr's statement and the decision as to the effect of the rate filed with this Board, Judge Treacy has

this to say, reading from the testimony of December 13th, 1921, page 10:

"Commissioner Treacy: If it was merely a petition to this Board to investigate—I mean if the company merely filed with this Board a petition asking this Board to fix just and reasonable rates, then, of course, the provisions of the statute with regard to what shall take place on the filing of the rates by the company would not be applicable, but if the company filed the rates; filed a schedule of rates, then the statute is clear and definite as to what takes place. The statute says that those rates become operative and are the rates of the company unless the Board shall suspend.

"Prior to March, 1921, the Board only had power to suspend for a period of three months. It must decide within three months whether the rates as proposed are just and reasonable, but if it didn't suspend and if it didn't decide that they were not just and reasonable, the rates became effective.

"Under a recent decision of the Court of Errors and Appeals handed down only ten days ago, in the Hackensack Water Company case, that Court holds just as I have stated; that the legislative act is that the filed rates are the rates of the company with power in the Board to suspend for the purpose of investigating them for a period of three months, prior to the Act of March, 1921, and under the Act of March, 1921, if the Board has not been able to fully investigate, it may suspend them for three months further.

"Now the situation here is, that if it was a mere petition that the Company filed asking us to investigate and establish what might be

just and reasonable rates, then the matter is open on that subject. If a schedule of rates was filed—and the company declare that it had; that that was the schedule of rates it proposed to put into effect, then those rates are in effect."

I think that answers that question.

Now, with regard to the advertisement, as I read the testimony, it is found in the transcript on page three of the testimony taken before the Board on October 4th, 1921.

Commissioner Osborne: Is that in this particular petition?

Mr. Brown: Yes, sir.

"Commissioner Treacy: What is involved here, Colonel?

"Mr. Betts: The company, in sending out notice to its customers stated that they would put into effect this rate at this time and then later adjust the rates and adjust the accounts with the customers, based on what the Board finally determined, and of course, the Board never did finally determine the matter.

"Mr. Starr: Here is the notice that was sent out when the rates were made effective: 'The Millville Electric Light Company petitioned the State Public Utility Commission last November for the following rates (shown below) to cover increase of cost in the production and distribution of electric current. The Commission suspended the adoption (or secured our promise to do so) of the rates for three months. This time having elapsed, the rates will now be put in force from the dates of the meter readings on the last of February.'

"'So that all the customers shall be treated with entire fairness, and not suffer any loss from the suspension of the Public Utility Commission by the late action of the Governor, the Electric Light Company will, upon the payment of all bills, give the customer a receipt guaranteeing to abide by the decision of the new Board, and if such calls for a rebate upon the payment already made, the company will upon the presentation of said receipt, promptly make any refund such decision shall call for or require.'

"Commissioner Treacy: You say 'by the late action of the Governor'?

"Mr. Starr: Yes, the suspension of the Public Utility Commission by the late action of the Governor.

"Commissioner Treacy: I see.

"Mr. Starr: This matter arose in October, when the old Board was functioning, and almost immediately after that the difficulty arose and they failed to render any decision upon the case as made.

"Commissioner Treacy: And you want a decision so that you will know whether to turn this money back to the customers or keep it?

"Mr. Starr: I don't know that we want a decision. We are perfectly willing to have the rates continue; it is left up in the air. I might add that the statements show that every month since February, the company has run behind.

"Commissioner Bacharach: Was Millville notified of this hearing today?

"Mr. Franklin: Yes, sir.

"Commissioner Bacharach: Was the Mayor of Millville notified?

"Mr. Franklin: The Mayor of Millville was notified of this Commission's meeting, and all of the Commissioners and also their attorney, Mr. Miller.

"Mr. Starr: The only notice we had was the letter from Mr. Barber, saying that the Board, of its own volition, was to reopen the hearing.

"Commissioner Bacharach: You made much of the fact that while the other case was pending, you had asked for a still higher rate; what did you mean?

"Mr. Starr: What happened was this: The first application, the original rates were based on a twelve cent basis, and we made an application to increase to sixteen cents, pending the hearing. Before the first petition was heard, material and labor had increased so it was necessary to file a twenty cent rate, but when the schedules were put into effect, they were limited to sixteen cents and those are the rates which are now in existence.

"Commissioner Treacy: Which rates?

"Mr. Starr: Sixteen cent rates.

"Commissioner Treacy: Is there anybody here representing Millville?

"Mr. Franklin: No, sir.

"Commissioner Bacharach: That is the reason I asked that question before."

The other is colloquy that goes on between counsel and the Board to the same effect. That is all I can find with respect to the advertisement. Mr. Barber has the advertisement here.

Do you remember, Mr. Miller, whether that was the only offer of the notice in evidence?

Mr. Miller: Just a minute. What was the date of that hearing, Senator Brown?

Mr. Brown: The one I just read?

Mr. Miller: Yes.

Mr. Brown: October 4, 1921. You were not present on that day, evidently, by the transcript, but you were on December 13th.

Commissioner Osborne: Are you through, Senator?

Mr. Brown: Yes, sir.

Commissioner Osborne: Judge Starr, do you wish to say anything?

Mr. Starr: No, sir.

Commissioner Osborne: Can you point out in this notice any reservation that you speak of? You said there was a reservation; a few moments ago you said there was a reservation.

Mr. Starr: A reservation in what respect?

Commissioner Osborne: As to whether or not you mean this, whether you would abide by it.

Mr. Starr: The receipt that was sent out was this—

Commissioner Osborne: Here is the notice. I asked you then whether it was a mental reservation or whether—

Mr. Starr: The purport of that, it seems to me, the construction adduced from that is whether or not the rates as filed were sanctioned by the Board, whether the company had the

legal right to put those rates into effect, and that was determined, I understand, by Judge Treacy.

Commissioner Osborne: You just stated two propositions; your first asked whether they were sanctioned by the Board and then you immediately coupled that up with the query whether they had the legal right.

Mr. Starr: Well, it meant the same thing, it seems to me.

Commissioner Osborne: No, it meant very different things; they might have had the legal right, but they couldn't be sanctioned by the Board. The law might be you would not be prejudiced by the failure of the governing body, this Board; therefore, you might have had the legal right to put them into effect, but the question is whether, when you did so, whether you made certain statements, public statements, which the people and this Board, I think, had a right to assume were made in good faith. I don't think there is any question or that there can be any reasonable doubt about what this advertisement says and the construction placed upon it; there is no reservation in it whatever. You say you will abide by what the new Board, when appointed, determines.

This case will be opened for the purpose of introducing any new testimony and for the purpose of enabling the Board to make whatever new decision may be necessary or deemed advisable by the Board at its conclusion.

Do you want to offer any additional testimony or do you rest on the record?

Mr. Starr: No, if your Honor please, I take this position, that I was not aware that any

testimony was to be taken today and I object to the introduction of any evidence because we have not had notice—

Commissioner Osborne: You had notice last week or two weeks ago.

Mr. Starr: Not that there was to be any testimony taken.

Commissioner Osborne: What does "opening the case" mean?

Mr. Starr: I assumed from what Senator Brown told me that you were to fix a day for the purpose of taking testimony.

Commissioner Osborne: There need be no difficulty about that; the mere question of whether the testimony is to be taken today or tomorrow is purely a secondary one. This Board has no desire to prejudice you by saying you must go on today when you are not ready to go on today.

Mr. Starr: I am not prepared to go on with any testimony today.

Commissioner Osborne: The question I asked you was whether this case having been reopened, whether now, or at a day to be fixed at this time, you will desire to offer any additional testimony.

Mr. Starr: That will depend entirely on whether the municipality or the Board itself introduces any additional testimony.

Commissioner Osborne: Do you wish to offer any additional testimony or do you want to rest on the record?

Mr. Miller: I will rest on the record.

Mr. Brown: The municipality ought to at

least introduce that notice and prove whether there have been any rebates since that time or not. That may be admitted.

Mr. Miller: That is admitted.

Commissioner Osborne: I think it is already in the record because Judge Starr read it in the record.

Mr. Miller: There is one thing I would like to get in, but if you object to it I am willing to close without it. I would like to have the Chancery record in if it isn't in, because it shows the public, through the municipality, endeavored to enjoin you from putting these rates into effect and the Vice Chancellor's finding that the remedy was with the Board of Public Utility Commissioners.

Commissioner Osborne: Even though there was no Board of Public Utility Commissioners in existence?

Mr. Miller: At this time there had been a Board appointed. Do you object to that, Judge Starr?

Mr. Starr: No, not in the slightest. Although I don't think it has any materiality.

Commissioner Osborne: I don't see how it will affect the proceedings.

Mr. Miller, No, it only illuminates the case, that is all, so I will put in, if your Honor please, the record in the Chancery proceeding.

Commissioner Osborne: There is no objection to it. I cannot see how it is going to be helpful at all.

I see no reason for putting any further testimony in, so far as the Board is concerned.

We have the facts.

Is there anything further, Senator Brown, that you think of?

Mr. Starr: It may be that if your Honor will permit me to consult with Mr. Franklin, we can finish this entire matter today.

Commissioner Osborne: Certainly; we are not going to string this matter along any longer than necessary.

(AFTER CONSULTATION)

Mr. Starr: I desire to put in evidence the form of receipt which was given in 1921, prior to the date on which the hearing was had on the 13th of December, 1921, at which we contend Judge Treacy made the ruling that the rates were properly filed, and I will ask Mr. Franklin one question.

Commissioner Osborne: Mr. Franklin has been sworn in this case, has he?

Mr. Starr: Yes, sir.

S. J. Franklin, recalled on behalf of Millville Electric Light Company.

FURTHER DIRECT EXAMINATION

By Mr. Starr:

Q. I show you this form of receipt, Mr. Franklin; was that form of receipt used by the Electric Light Company in 1921?

A. Yes, sir, after the new rates were put in force.

Q. And how long was that form of receipt continued?

A. Until the time that Judge Treacy rendered his decision that we considered made the rates legal; sometime in November, I think.

Q. And were any receipts given of that character containing the notation with reference to the rebate, which reads as follows: "The amount paid on this bill is subject to a refund providing the Utility Commission does not approve our published rate, as charged on this bill. The amount refunded to be the difference between this charge and whatever rate the Commission may establish." Was a receipt of that character used by the company after the date you say Judge Treacy rendered his decision?

A. No, sir.

(Millville Electric Light Company bill dated October 1st, 1921, received and marked "Company's Exhibit 1—October 16-23.")

Mr. Starr: Cross-examine.

Mr. Brown: May I ask one question?

Commissioner Osborne: Before you take up any other matter.

Q. (By Commissioner Osborne.) Have you had any of these receipts presented to you since the publication of the new rate?

A. No, sir.

Q. Has there been public notice given of this new rate that you have filed?

A. No, sir, only just on the bills.

Q. What would be your attitude if anyone should present such a receipt and ask you for the difference?

A. We would tell them just the same as we have told the Board here that Judge Treacy's decision made the rate legal and we wouldn't have given any refund.

Q. (By Mr. Brown.) I show you a letter here purporting to come from your company under date of February 23rd, 1921, addressed to A. N. Barber, Secretary of the Board of Public Utility Commis-

sioners and having annexed thereto a printed notice of a schedule of rates, purporting to be signed by your company and this letter signed by your company and ask you if you sent that letter to Mr. Barber with the notice attached (handing witness letter with notice attached)?

A. I don't think there is any question about that at all.

Mr. Brown: I would like to offer that letter and notice in evidence.

(Letter to Board of Public Utility Commissioners dated February 23rd, 1921, with notice attached, signed Millville Electric Light Company, S. J. Franklin, General Manager, received and marked Comm. Exhibit 1. October 16-23.)

Q. That notice that is attached to that letter your company caused to be published in the newspapers circulating in the municipality?

A. I think it was; I couldn't say for certain, but I think it was.

Mr. Starr: May I make an objection on the record? I object to the introduction of the letter and the notice as immaterial in this proceeding.

Q. Has there been any rebate made according to the provisions of that notice by your company?

A. No, sir.

Mr. Brown: That is all I have.

Commissioner Osborne: Any other testimony to be introduced?

Mr. Starr: That is all.

Commissioner Osborne: What do you say to Mr. Barber's suggestion?

Mr. Starr: I confess that I didn't get the purport of it. Of course, I didn't understand exactly what he said, something about a stipulation as to the rate. I want to take that up with Mr. Franklin today.

Commissioner Osborne: Will you restate it, Mr. Barber?

Mr. Barber: The point is this: The Board fixed a certain schedule of rates to become effective on the 1st of January, this year, which would mean, of course, if they were adopted, that the money would be refunded from the 1st of January up until the present time, when the schedule fixed by the Board or authorized by the Board became effective. Now, if that money is not to be refunded, if the rates the Board fixed are reasonable rates and it is so determined by the Courts, then, with the money not to be refunded, the rates should be lower, because now the rates, based upon the assumption that the company must refund certain sums of money, are too high.

My thought was that the whole thing might be settled by the company agreeing to leave to the Court the determination of whether the rate fixed by the Board was a just and reasonable rate, either this rate with the refund to be made or some lower rate without the refund. In other words, if the Board fixes a lower rate than that now authorized because the company won't make any refund, the appeal will be taken from that low rate and the company will go before the Court as to whether that is just and reasonable.

Now, the Board might, with the consent of the company, issue an order making the present rates effective from the 1st of January, 1923,

if the company would stipulate that in the event of the Court finding that this rate so fixed by the Board was just and reasonable they would refund from the 1st of January up to the present time. In other words, will the company go before the Court taking its appeal from the present rate schedule with the refund feature in it or will the company go before the Court with an appeal from an order fixing lower rates than those now authorized and without the refund feature in them?

I don't know whether I make myself plain or not.

Mr. Starr: I would want to consider that matter; I wouldn't want to make any stipulation today.

Mr. Miller: On behalf of the city today, if we have any say in the matter, we wouldn't stipulate anyway. Our attitude is this, we want an order of the Board, no matter what it is. The public wouldn't be satisfied if I made any stipulation of any kind.

Commissioner Osborne: This contemplates an order of the Board.

Mr. Miller: Yes, but by consent. I wouldn't consent to it, if your Honor please, and I want to make that perfectly plain.

Commissioner Osborne: The taking of testimony is closed. The case is open, of course, until such time as a decision is rendered.

The situation as developed will necessitate a re-examination of these figures with a view to ascertaining whether any different rate should be found on account of the refusal of the company to abide by this rebate matter, or

if we determine that they are legally bound by that, as the record now stands, then this rate will stand. If it becomes necessary, owing to the fact that the matter must be re-examined, to have any further testimony, both parties will be notified of the time and the place: otherwise the matter is closed until the Board reaches its determination and it will then file a supplementary decision. if one is necessary, and base an order on it, so that you will be in a position to make an appeal from the order.

Mr. Starr: I think I ought to, in justice to myself, make an explanation in reference to the writ of certiorari.

My judgment was that it was not a final order, that the opinion was not a final order, but evidently the clerk of this Board assumed that it was a final order because of the fact that we were required to appear and give some reason for not putting the rate into effect. I tried to get in touch with Mr. Barber on two or three occasions— I got his office— to learn what the attitude of the Board was with respect to the finality of that decision and I couldn't get any satisfaction one way or another, so that rather than be in laches I applied to Judge Trenchard for a writ of certiorari, explaining my position, and he allowed the writ on the understanding that if the Board took the position it was not a final order the writ would be dismissed. That was stated before Judge Trenchard.

Mr. Barber: I would like to say just one word, please. It was never assumed at all by anyone, so far as I know, that this decision by the Board was an order of the Board; there is nothing in the decision which, it seems to me, makes it capable of that construction. I have

been all through this from the time when the rate schedule was first filed, and what happened was, the company filed, as referred to here, a schedule of rates, and it was shown and demonstrated to the Board that the company made a promise to the people of Millville that it would refund anything beyond what the Board found to be a reasonable and just rate for the company to charge, and the Board, after its hearing, came to the conclusion that certain rates were just and reasonable, these rates being higher than the old rates, that is, the rates which were in effect before the company, without any authority or any approval by any tribunal at all, increased its rates. The Board, in effect said to the company, you may charge these rates, which are higher than the rates which you put into effect in the past, and you may charge them from the 1st of January of this year. The Board, of course, assuming that the company was going to keep its word and was going to make the refund which it had agreed to make and which it had promised to make and which it had written to the Board it would make. Then there was a meeting in Newark and I came back here and learned that Mr. Starr had called up our office and had asked if this required an order of the Board for a review. I had to put off the answering of that question until I could get the advice of the Board, because it raised a question that none of us had contemplated, as to whether the company intended to review this and intended to go back on its word and did not intend to put into effect the rates the Board authorized and intended to appeal from them, and before I could have the opportunity to consult with the Board and advise the company, they applied

for the writ of certiorari and they were then notified to appear here; they were notified to appear here, in fact, before the writ of certiorari was applied for and it was assumed then the question would come up as to whether they required any further action to take their appeal.

Commissioner Osborne: The decision is not an order.

Mr. Starr: I appreciate that; that was my thought all along.

Commissioner Osborne: A paper called a decision might be an order if it had appropriate language in it that would make it an order. In other words, if it went on to say at its conclusion "It is hereby ordered," then it would be an order, but it wasn't in this case, for the purpose I think we are all familiar with and needs no reiteration.

That will close the matter for the time being any way.

(Matter taken to conference. If any further testimony is to be introduced all parties to be notified of date and place of hearing.)

Filed December 31, 1923.

NEW JERSEY SUPREME COURT

MILLVILLE ELECTRIC LIGHT COMPANY,
Prosecutor,
vs
BOARD OF PUBLIC UTILITY COMMISSIONERS OF THE STATE OF NEW JERSEY,
Respondent.

On Certiorari.
Reasons for Reversal.

The prosecutor above named hereby presents the following reasons for the reversal of the order and decree of the respondent removed by the writ issued in the above entitled cause.

1. Said respondent erred in holding that the schedule of rates or charges for electric energy made by the Millville Electric Light Company prior to September, 1923, was unjust and unreasonable.

2. On the record made by the hearings before said respondent, the latter should have found and ordered that the said rates or charges were not unjust and not unreasonable but were no more than an adequate return to the prosecutor upon the property used and useful in the operation of its business.

3. The respondent erred in finding that the schedule of rates which the prosecutor was permitted to file was just and reasonable.

4. Under the record made at the hearings aforesaid, it appeared that the prosecutor was entitled legally to a greater return on its property

used and useful in the operation of its business than the schedule of rates found to be just and reasonable by the respondent.

5. The order removed by the writ in this cause was based upon a finding by the respondent that the value of the property of the prosecutor known as the steam plant should be entirely excluded in determining the value of the property of the prosecutor used and useful in the conduct of its business, whereas the steam plant should have been included as property used and useful in the operation of the business and a just and reasonable rate should be based upon the inclusion of the value of such steam plant.

6. The order of the respondent, in eliminating the cost of construction and operation of the steam plant was erroneous and not justified by the proof submitted to the respondent.

7. The action of the respondent, in excluding from the operation of the steam plant an item of $2400 for production expenses, $7458 for expenses of street lamp service and $6484 for law expenses was improper, erroneous, illegal and not justified by the proof.

8. The schedule of rates fixed by the respondent by the order removed by the writ of certiorari will not produce to the prosecutor an adequate return for the property used and useful in the conduct of its business.

LEWIS STARR,
Attorney of Prosecutor.