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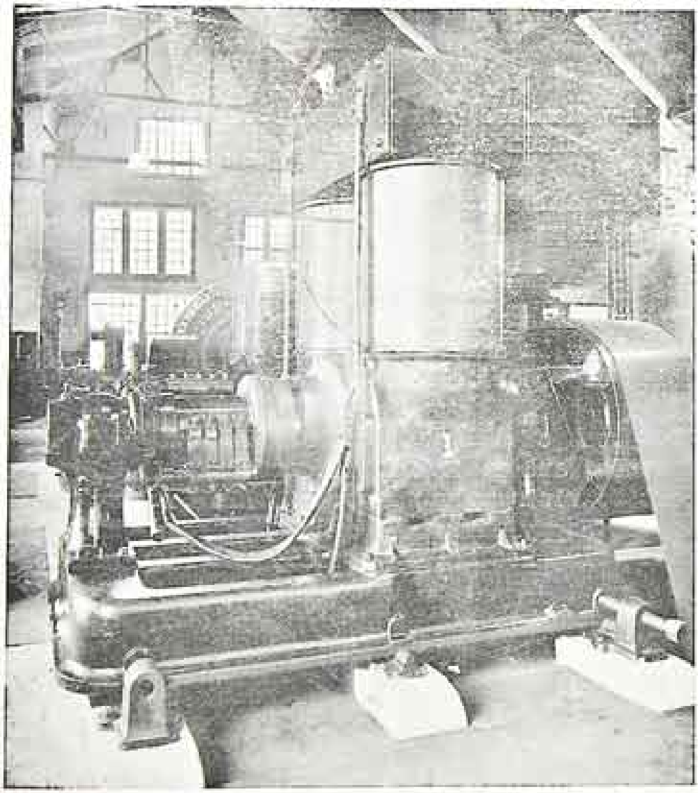


Edison Bi-Polar at Station 4—One of the Few Pioneer Generators Still In Service

Fellow Members of our Organization:-
Season's Greetings!

We are celebrating what to most of us is the Happiest Season of the year.

We are happy in contemplation of what we have accomplished in the past year, and happy in anticipating the possibilities of the bright New Year just ahead.

But best of all we love to think of friends, and it is in this way that I want to wish every member of this Company a very Happy Christmas and a New Year that will bring Health, Prosperity and Happiness.

President.

GAS AND ELECTRIC NEWS

Vol. 8 — DECEMBER, 1920 — No. 6

A Peep Into the Future

FRANKLIN J. HOWES

THAT the electric art is still in the vigor of youth, if not in its infancy, is indicated by the accompanying chart. This was prepared by our Engineering Department as an aid in prognosticating the growth of our electric business. This has to be done every year in order that we may make ample provision for additional generating capacity before it is needed, while avoiding unnecessary investment of capital on which the interest and taxes may become a very serious drain on the Company's resources if we make the mistake of installing such large generating units that a considerable proportion of their capacity lies idle two or three years waiting for the load to pick up.

In dealing with this problem two factors have to be borne in mind. One is that the city and surrounding territory served are rapidly growing, both in geographic extent and in

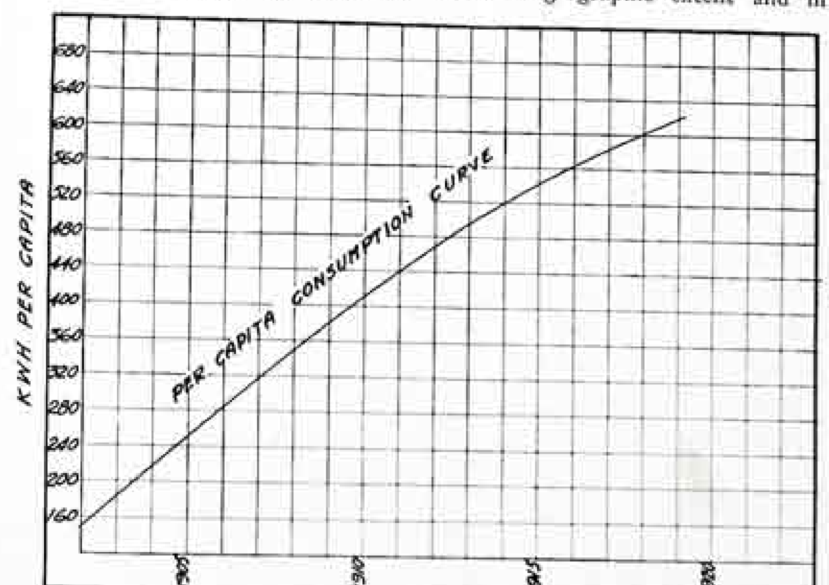


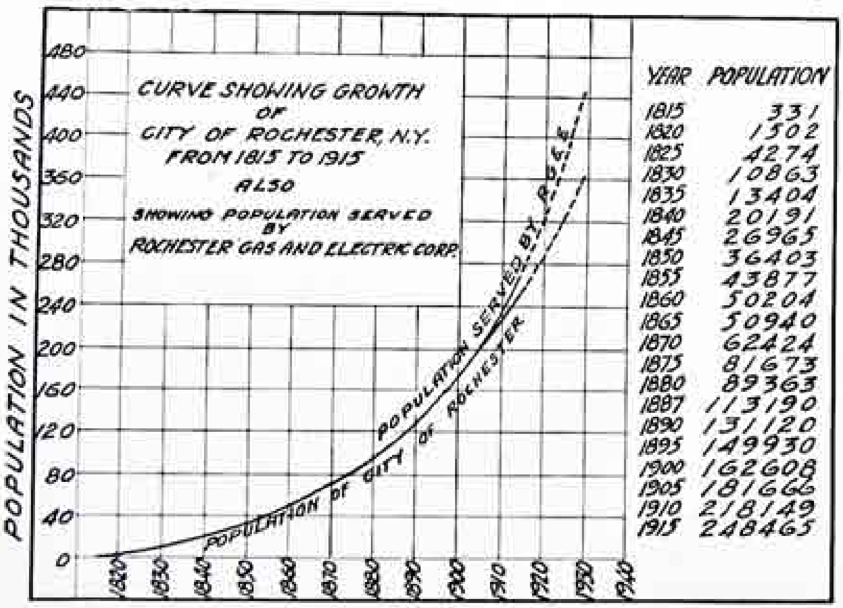
Fig. 1. YEARS

density of population. The other is that a given population increases its consumption of electricity per capita as people learn of new ways in which electricity can help them by increasing the rate of production in factories and increasing the comforts of home. It will be found by reference to Chart No. 1 that in 1905 the annual consumption of electricity in Rochester was 250 kilowatt-hours per capita. In 1912 this had increased to 468 kilowatt-hours per capita and in 1909 to 620 kilowatt-hours per capita. The rapidity of increase becomes less as the market becomes more nearly saturated.

A certain development now taking place is probably destined to exert a greater influence on the electric consumption per capita than any other which has occurred since the beginning of electrical distribution on a commercial scale. This is the widespread use of electric furnaces for all sorts of industrial processes where heating devices are used, especially in metallurgy. This increases the difficulty of estimating future growth of load because metallurgical furnaces are in such large units that the addition of a single customer of this type might increase our total load as much as 10%. We are receiving quite a few inquiries from prospective customers of this class who express a desire to establish new industries or to change existing processes as soon as we are in a position to render the service they desire.

Even without regard for this tendency, a comparison of our present rate of load growth with that in other cities throughout the country leads us to assume that by 1930 Rochester will be consuming about 700 kilowatt-hours per capita per year. If reference is now made to the chart showing the rate at which Rochester's population has grown during the last one hundred years, it does not require a great stretch of the imagination to see that we will probably be serving about 400,000 people in 1930, the consumption then being estimated at about two hundred and eighty million kilowatt-hours per year. To this must be added certain unavoidable losses in generation, transformation, transmission and distribution amounting roughly to about 10%, so that we will have to generate a little over three hundred million kilowatt-hours per annum by that time, with probable limits of 10% above or below.

The importance of such speculation in futurities lies in the fact that it takes from three to four years to get a power plant in operation after the preliminary work is begun.



YEAR	POPULATION
1815	331
1820	1502
1825	4274
1830	10863
1835	13404
1840	20191
1845	26965
1850	36403
1855	43877
1860	50204
1865	50940
1870	62424
1875	81673
1880	89363
1887	113190
1890	131120
1895	149930
1900	162608
1905	181666
1910	218149
1915	248465

Fig. 2

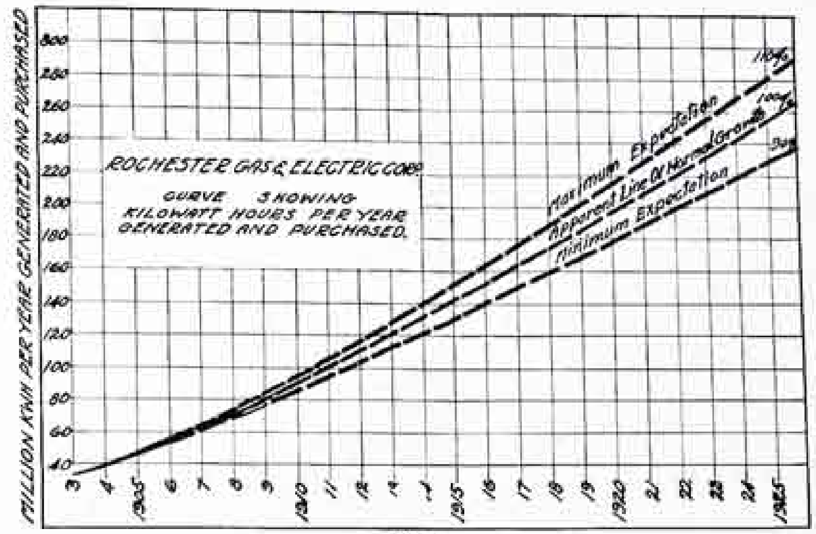


Fig. 3

THE MISTAKES OF LIFE

Judge McCormick says these are the thirteen mistakes of life:

1. To attempt to set up your own standards of right and wrong.
2. To try to measure the enjoyment of others by your own.
3. To expect uniformity of opinions in this world.
4. To fail to make allowances for inexperience.
5. To endeavor to mold all dispositions alike.
6. Not to yield to unimportant trifles.
7. To look for perfection in our own actions.
8. To worry ourselves and others about what cannot be remedied.
9. Not to help everybody, wherever, however and whenever we can.
10. To consider anything impossible that we cannot ourselves perform.
11. To believe only what our finite minds can grasp.
12. Not to make allowances for the weaknesses of others.
13. To estimate by some outside quality when it is that within which makes the man.—*Exchange.*

The Development of the Company's Steam Generating Equipment

ROGER DE WOLF

IN common with other hydraulic generating companies whose plants are located on rivers subject to wide seasonal variations in flow, this Company almost from the first has found it necessary to supplement its hydraulic generating capacity with steam generating capacity to make up for the deficiencies in hydraulic generation during low flow periods of the river.

In 1901 the station now known as Station 3 was built as a combined hydraulic and steam station and prior to the completion of the construction work a consolidation of the power companies in Rochester took place, this consolidation being the forerunner of the present Company. The principal steam generating plants at that time were Station 1, old Station 2, both now entirely dismantled, and Station 3. Station 1 was the old steam railway generating station.

The steam generating equipment in old Station 2 consisted of eleven Porcupine Boilers with a total rating of 5,100 H. P. and fifteen diversified generating units with a total capacity of 4,500 K. W. The plant was hand fired and expensive to operate.

The steam generating equipment at Station 3 consisted of eight Altman and Taylor water tube boilers together with five vertical cross compound and one horizontal cross compound engine driven generators. In 1906 the horizontal unit was taken out and a 3,000 K. W. vertical turbine put in its place, no further changes being made until 1912 except the addition of two similar boiler units. The generating capacity in 1912 was 9,000 K. W. with ten 600 H. P. boiler units.

Figure 2 is a view of the old engine room with the six engine driven units, the horizontal machine in the foreground of the picture being later replaced by the 3,000 K. W. vertical turbine. Figure 3 shows two of the 7,500 K. W. turbines installed in the place of two of the vertical cross compound engine driven units shown in figure one.

In 1907 a contract was entered into with the Niagara, Lockport and Ontario Power Company for delivering Niagara power to this Company, and a transforming station (Station 33) was built with a capacity of 3,000 K. W. Additions were made to this station in 1909 and 1911, bringing the capacity up to approximately 14,000 K. W. in 1911.

In 1912 the Company's load was rapidly increasing and a careful study was made of the situation. It was decided that additional steam generating capacity should be installed to meet the increasing demands of our customers and accordingly a program of expansion for Station 3 was laid out. Some of the factors entering into this decision were:—

1st—The high cost of operating the steam generating capacity at old Stations 1 and 2.

2nd—The high cost of additional purchased power from the Niagara Companies to carry our peak load.

3rd—The imperative necessity of increasing our generating capacity.

It was found that with the improved types of steam turbines available at that time, a 7500 K. W. horizontal type of machine would require no very greatly increased boiler capacity over the 3,000 vertical type already installed. It was felt, in fact, that the existing boiler equipment could be safely and economically forced to

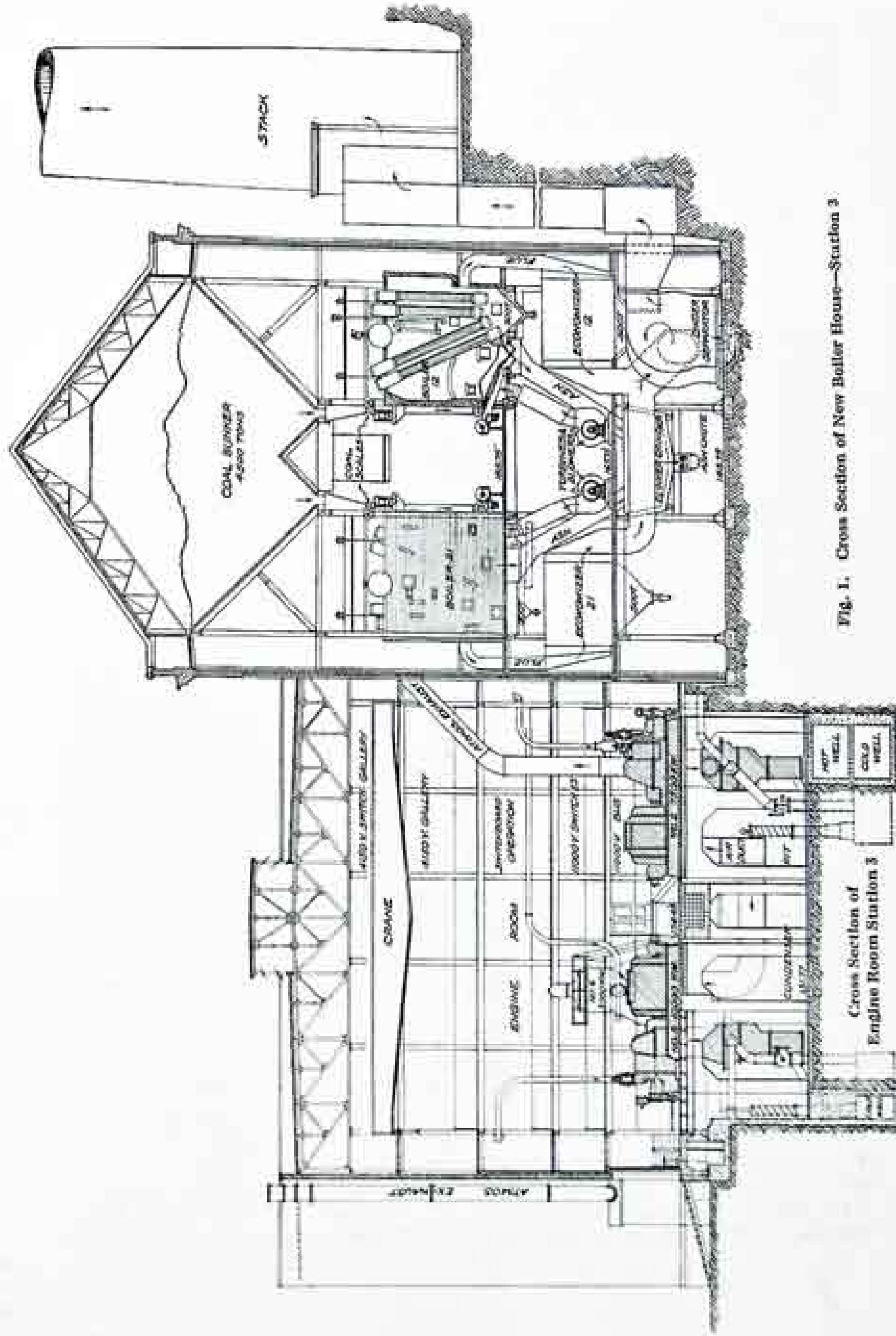


Fig. 1. Cross Section of New Boiler House—Station 3

Cross Section of Engine Room Station 3

somewhat higher ratings than those then prevailing and thus carry the 7500 K. W. machine without difficulty. Accordingly this machine was installed and put into operation in the fall of 1912.

Our studies of the costs of power generation during 1912 had indicated the probable desirability of still further reducing our Niagara purchased power to a point where the load factor on the purchased power would be higher than was then the case. As is usual in the case of such purchased power, the Company was buying this Niagara power on a horsepower year basis, being required to pay for the maximum demand placed on the Niagara Company irrespective of the number of hours per day that this demand was used. For short hour use power, this was found to be very expensive and with the improved efficiencies which the turbine manufacturers were willing to guarantee, it was seen that considerable economies could be effected by the generation of this peak power by steam.

The result was that in 1913 work was started on a new boiler house to provide steam for two 7500 K. W., 25 cycle, 3 phase turbo-generators.

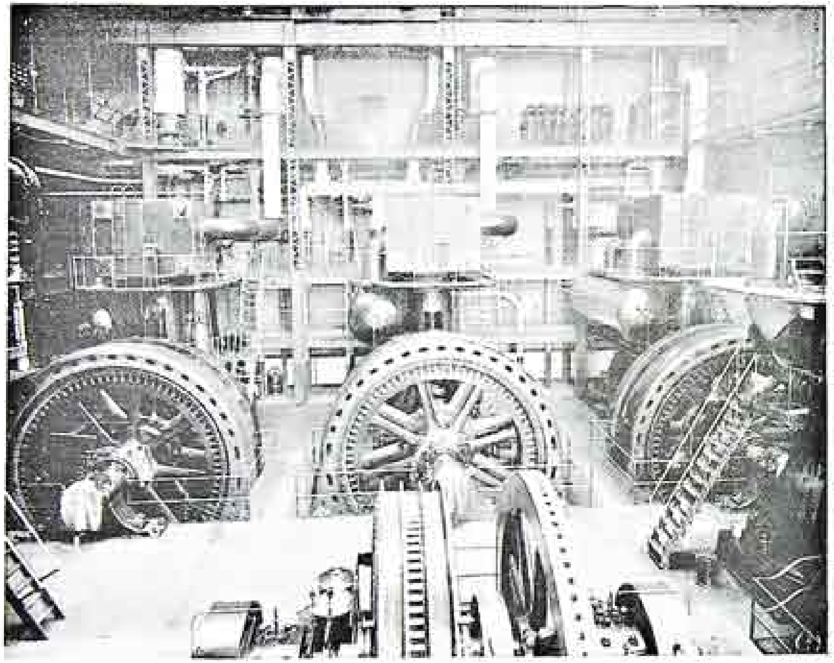


Fig. 2. Engine Room at Station 3 in 1906

In designing this addition to the plant certain limitations were placed upon the design due to the fact that it was an addition and had to be fitted in to the existing plant. The major limitations were:—

1st—It was essential to have the operating floor of the new boiler house on the same level as the operating floor of the old boiler house.

2nd—The pressure on the new boilers was determined by the allowable pressure on the existing boilers.

3rd—It was only possible to extend the old house to the North.

4th—Provision for growth was imperative.

After a careful study of different types of plants, it was felt advisable to go to a larger size boiler unit than had been used in the old plant and to install economizers together with underfeed stokers. The plant was laid out for twelve 875 H. P. boilers, each boiler being equipped with an individual economizer and turbine driven fan for furnishing forced draft. In order to keep the operating floor of the old and new boiler houses the same, it was necessary to put the economizers below the boilers and the plant was arranged in four levels. First, the basement level in which the boiler feed pumps, feed water heaters, etc. together with ash handling apparatus and the smoke flue were located. Next above this came the economizer floor containing the economizers and forced draft fans. Next above this the boiler floor and above that the bunkers with a capacity of 4500 tons of coal. The ground area being limited, the very careful design was necessary to avoid undue cramping.

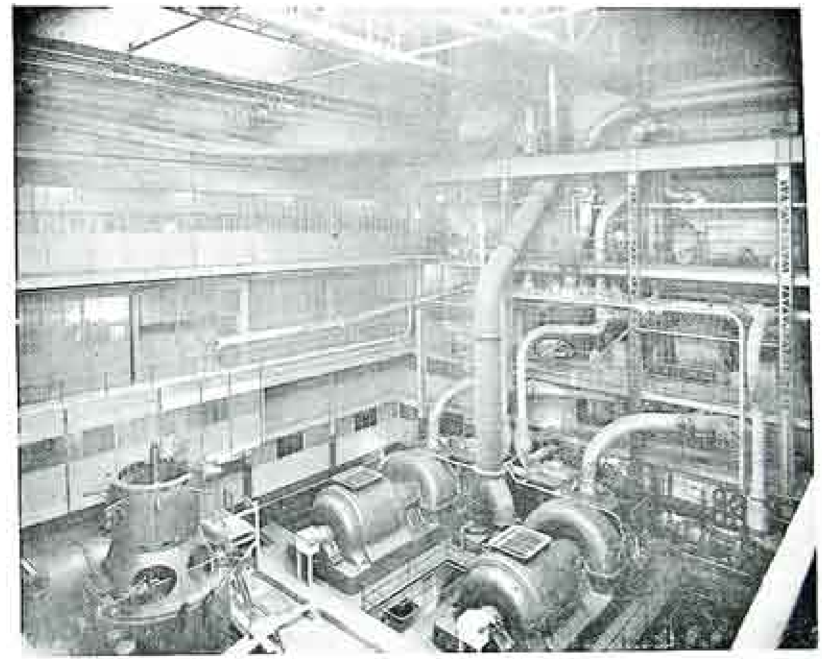


Fig. 3. Engine Room at Station 3 in 1919

Figure 1 is a cross sectional view of the completed station as it stands today and practically as it was designed in 1912. As it was necessary to cart all of our coal to the station, we felt that it was imperative to provide large coal bunkers in the station. From the bunkers the coal passes through chutes to automatic coal weighers on each boiler, thence by gravity to the underfeed stokers, and the ash passes down through ash chutes from the boiler room floor to ash storage bins in the basement. The products of combustion pass, as shown, from the boiler through the flue to the economizer, thence down to the cinder separators and ducts located in the basement, thence through a duct outside the building to the stack.

In the engine room the main floor level was lowered about 5 feet and the turbines were installed on reinforced concrete foundations with the jet condensers bolted rigidly to the exhaust on the bottom of the turbine. Hot and cold wells were driven through the solid rock on each side of the station, three condensers taking the water from each cold well and discharging it into the hot well.

Figure 9 was taken during the erection of the boilers, superheaters and stokers. It shows one of the 875 H. P. Bigelow-Hornsby boilers designed for 225 pounds operating pressure together with a Foster protected tube type of superheater designed to give 125° F superheat. The Taylor stokers are shown partially erected, the dump plates, extension grates and some of the Tuyere blocks being in place.

The economizer installation was of rather generous design as it was expected that the boilers would be operated at over-ratings most of the time. The ratio of the economizer surface to boiler surface is 1.00 to 2.45. Exhaust steam from the auxiliaries is used in the open feed water heaters to bring the feed water up to a temperature just above the sweating point of the economizers. The average inlet temperature to the economizers is about 120° F., and the average discharge temperature about 250° F., with the flue gases leaving the economizer at an average temperature of something below 300° F.

For simplicity of control, the forced draft fans for the stokers are turbine driven and in the original installation the boiler feed pumps were also turbine driven. The original pumps were three stage centrifugal pumps working up to 300 pounds pressure per square inch with a capacity of 530 gallons of water per minute. Two additional pumps have been installed with a capacity of 1,000 gallons per minute, one being motor driven and the other turbine driven. Some very interesting engineering problems were worked out in connection with the installation of this motor driven feed pump. The pump is driven by a three phase slip ring motor with an automatic speed control so designed that the motor driven pump will properly divide its load with the turbine driven pumps when they are operating in parallel. This motor driven pump was installed so that the amount of exhaust steam could be varied, depending upon the demand for exhaust steam by the open feed water heaters, thus enabling the operators to maintain a proper heat balance for the plant. The feed pumps take their suction from the open feed water heaters where the temperature of the feed water is raised to about 212° F. All auxiliary apparatus in the plant is of the rotative type, no reciprocating apparatus being used.

As this station was intended to supply steam to our customers using high and low pressure steam for industrial or heating purposes, it was recognized that a considerable percentage of the total feed would, under any conditions, be supplied as make-up. An investigation showed that the cost of jet condensers plus a water treating plant was much lower than the cost of surface condensers

plus a smaller water treating plant for treating the make-up water. Consequently Jet Condensers were adopted and a Scaife intermittent water treating system was installed which now has a capacity of 120,000 gallons per hour.

A single stack was built to take care of the new boiler house and as the plant is located in the heart of the City, it was felt advisable to build a tall stack so as to discharge the gases above any neighboring buildings. This stack is the largest, although not the tallest in Rochester, being 18′ inside diameter at the top and 265′ high. It was built on a ledge of rock on the West side of the station with a very heavy reinforced concrete foundation.

All coal is brought in from the Rome, Watertown and Ogdensburg Branch of the New York Central Lines by team or truck, passed through the crusher, and then by belt bucket conveyor is delivered into the bunkers. Running lengthwise of the bunkers is a Hunt bucket conveyor used to distribute the coal lengthwise of the bunkers. For emergency operation in case of breakdown, a Lidgerwood one ton bucket with electric hoist and a spare coal crusher are provided.

Due to the large amount of rock that had to be excavated, the construction difficulties encountered in building the new boiler house were very considerable. One of the city sewers had to be by-passed while it was being deepened and combined with the condenser intake and discharge system.

The additional boiler units installed in the new boiler house since 1914 have practically been duplicates of the original units. In 1917 and 1918 the old Roney type of stokers installed in the old boiler house under the Altman and Taylor 600 H. P. boilers were removed and replaced by Type "E" stokers furnished by the Combustion Engineering Corporation and Westinghouse stokers of the underfeed type. These new stokers are capable of burning a much larger amount of coal than the old ones and increased the steaming capacity of the boilers practically 100%.

In 1919 and 1920 two of the Type "E" stokers and two of the Westinghouse stokers in the old boiler house were taken out and replaced by Coxe Traveling Grate Stokers installed in order to enable the Company to take advantage of the coal market by burning coke breeze, anthracite screenings, and culm if occasion arose. This equipment enables us to burn low grade fuels not suitable for the under-

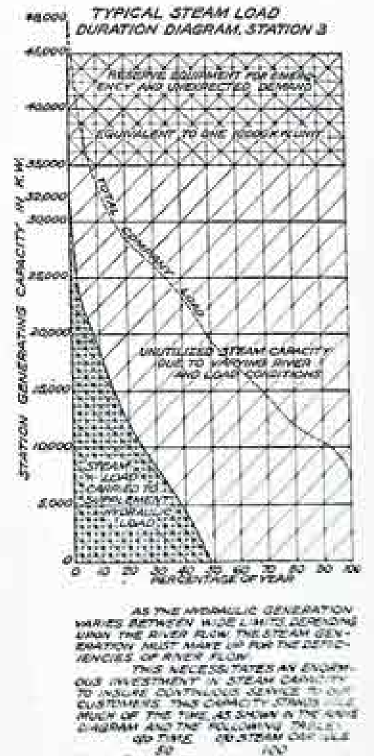


Fig. 4

Table 1

OPERATING RESULTS STEAM GENERATION

	1910	1911	1912	1913
Maximum Monthly Generation	Aug. 2,076,760	Aug. 2,407,378	Dec. 1,449,383	Aug. 2,728,084
Yearly Generation	10,378,999	8,254,972	7,988,865	14,346,473
Boiler Labor	$21,092.50	$15,308.39	$18,823.47	$28,804.52
Engine Labor	21,952.78	12,829.62	14,420.76	25,638.00
Coal burned in tons	42,320.47	29,768.53	36,679.17	56,305.50
Average Cost coal per ton	$2.94	$2.12	$2.23	$2.70
Boiler labor per ton of coal	.498	.514	.513	.511
Engine labor per K. W. H.	.2155c	.155c	.1805c	.1777c
Engine & Boiler Rm. labor per K. W. Hr.	.415c	.341	.416	.38
Coal Cost per K. W. Hr.	1.202	.764c	1.025c	1.063c
Installed Gen. Cap. Jan. 1	13,500 K. W.	13,500 K. W.	13,500 K. W.	20,000 K. W.
Installed Boiler Cap. Jan. 1	12,600 B.H.P.	12,600 B.H.P.	12,600 B.H.P.	12,600 B.H.O.

	1914	1915	1916	1917
Maximum Monthly Generation	Jul. 3,189,550	Dec. 2,423,700	Oct. 7,788,254	Aug. 6,909,969
Yearly Generation	22,032,148	11,645,200	42,808,508	51,079,988
Boiler Labor	$23,963.72	$21,488.09	$29,830.68	$46,860.44
Engine Labor	20,043.93	14,122.78	15,826.24	18,398.00
Coal burned in tons	57,243.15	35,095.45	80,350.75	94,440.40
Average Coal cost per ton	$2.692	$2.511	$2.903	$5.102
Boiler labor per ton coal	.419	.611	.371	.514
Engine labor per K. W. H.	.091c	.121c	.037c	.036c
Engine & Boiler Rm. labor per K. W. Hr.	.2	.306	.1065	.1277
Coal Cost per K. W. Hr.	.581c	.454c	.439c	.797c
Installed Gen. Cap. Jan. 1	25,500 K. W.	25,500 K. W.	25,500 K. W.	35,500 K. W.
Installed Boiler Cap. Jan. 1	11,750 B. H. P.	11,750 B.H.P.	11,750 B.H.P.	11,750 B.H.P.

	1918	1919	1920—10 mos.	% Change 1910 to1920
Maximum Monthly Generation	Aug. 11,762,500	Feb. 6,692,900	Sept. 8,589,988	313.5% Inc.
Yearly Generation	83,576,536	31,082,427	53,762,240	517.0% "
Boiler Labor	$72,074.34	$66,952.52	$61,525.80	250.0% "
Engine Labor	26,438.57	29,743.26	28,758.06	57.0% "
Coal burned in tons	146,234.90	84,900.05	111,074.04	214.0% "
Average Coal cost per ton	$5.300	$4.940	$5.360	82.0% "
Boiler labor per ton coal	.493	.789	.554	
Engine labor per K. W. H.	.032c	.096c	.054	
Engine & Boiler Rm. labor per K. W. Hr.	.118	.311	.168	59.5% Dec.
Coal cost per K. W. Hr.	.767c	.745c	.703c	41.5% "
Installed Gen. Cap. Jan. 1	35,500 K. W.	45,500 K. W.	45,500 K. W.	233.0% Inc.
Installed Boiler Cap. Jan. 1	13,500 B.H.P.	15,250 B.H.P.	16,500 B.H.P.	31.0% "

feed type of stokers and it proved to be especially valuable during the period when the coal shortage was acute and soft coal difficult to obtain.

In 1917 and 1918 two more cross compound vertical engines were taken out of the engine room and two 7500 K. W. 60 cycle 3 phase turbo-generators installed in their places.

In the old plant the condensing water had been taken from the hydraulic power race, known as Brown's Race, directly to the surface condensers. The new turbines were fitted with jet condensers instead of surface condensers, involving some rather novel features of design. As the amount of water required for condensing purposes for the final plant capacity was very large, approximately 60,000 gallons per minute, it was necessary to use water direct from the river. In order to obviate pumping this water during the periods of low water in the river, the condensers were placed at such an elevation that the water would be raised to and injected into the condensers during low water by the vacuum of the condenser itself. The condensers were installed in a water tight pit so as to prevent leakage of water into the condenser operating room during high water elevation.

The Jet condensers were furnished by the Westinghouse Machine Company, being what is known as the low head Jet type equipped with the LeBlanc Air Pumps. The first installation was turbine driven but this machine has since been changed to motor drive and all subsequent machines have been installed with motor drive. Each condenser takes approximately 10,000 gallons of water per minute, requiring a 250 H. P. motor to drive it. The condenser is bolted directly to an extension of the exhaust opening of the turbine, all of its weight being carried by the turbine, there being no foundation under the condenser. Figure 5 shows one of the Jet condensers in place. At the left is seen the LeBlanc air pump and projecting from the face of the lower casing a portion of the volutes of the two centrifugal pumps which take the water out of the condenser and deliver it against atmospheric pressure to the hot well. Particular attention is directed to the extreme compactness of this design.

The foundations for the turbines

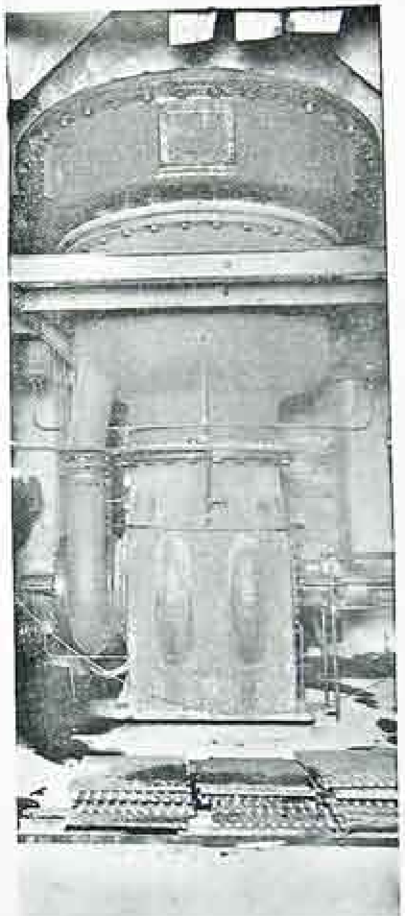


Fig. 5. Jet Condenser at Station 3

were somewhat of a departure from the then general practice of building quite heavy concrete foundations of the box type. The heavy side walls of this type of foundation were not suitable to our design, and we used a six legged type of foundation with the legs much smaller than were in general use at that time. The continued satisfactory operation of this type of foundation has amply justified the decision then made to eliminate the much more bulky and expensive box type.

The construction difficulties which had to be met in the engine room were very considerable. In order to place the condensers at the level desired, it was necessary to excavate approximately 30 feet of solid rock and at the same time keep the plant in operation. Figure 8 shows the construction work inside of the engine room during the installation of the two 7500 K. W., 25 cycle turbo-generators. The level in the foreground of the picture is approximately the level of the condenser room floor, a further excavation of about 10 feet being required for the condenser inlet and outlet tunnels or hot wells. The illustration shows quite plainly the heavy rope mats that were used to cover the rock while it was being blasted and prevent fragments from flying around the engine room. While this work was being done, the generating units already installed were in operation. An old sewer running out to the river was enlarged and divided horizontally into an upper and lower section, the condenser water coming in through the lower section and the condenser discharge going out through the upper section. This connection to the river was made large enough for the ultimate plant capacity and the condensers installed for the turbines since 1914 have been taking their water from the same intake.

Since 1914 additional boiler units have been installed in the new boiler house until today all twelve units are in place and the two remaining cross compound vertical engine driven generators have been taken out and

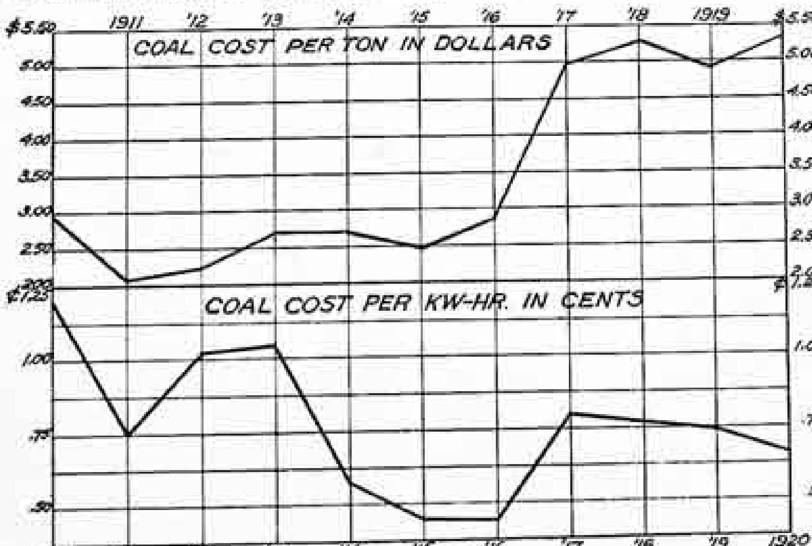


Fig. 6.

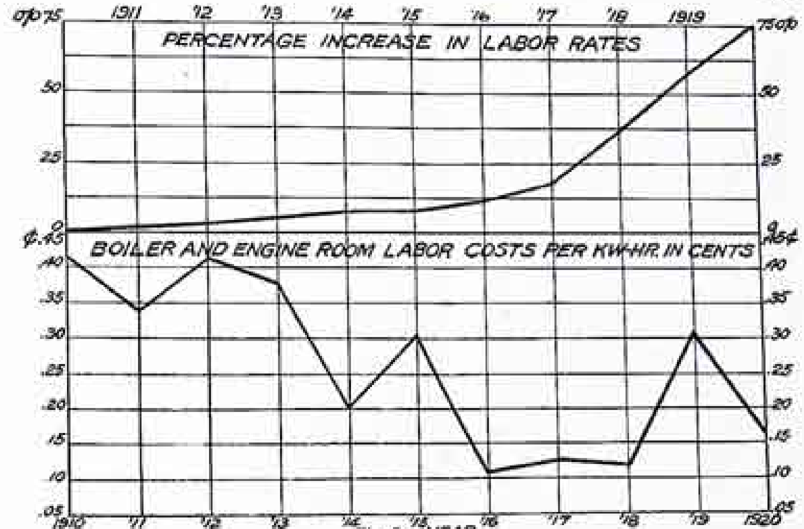


Fig. 7.

two 10,000 K. W., 60 cycle turbine generators installed in their places. It is doubtful if there is any plant in the country in which the installed capacity per square foot of engine room is as high as in this plant. Built originally to accommodate six engine driven units with a total capacity of 7,200 K. W., the same engine room today contains six turbo-generator units with a total capacity of 45,000 K. W. or over six times the original capacity. While this results in a very compact design yet it is not congested and offers no special operating difficulties. It stands as a striking commentary on steam turbine capacity as compared with the engine driven units and of what can be done in case of necessity with only a limited amount of floor area.

Figure 3 shows the two 7500 K. W., 25 cycle turbo-generators together with the atmospheric relief piping and the bleeder connection from these turbines to our low pressure heating system. These are the largest bleeder turbines installed, the bleeder connection being 20 inches in diameter. This connection comes off between the 1st and 2nd stages. Additional nozzles were installed in the first stage and gridiron type of valves installed on the second stage so that the amount of steam passing into the second stage could be reduced. The design of the machine is such that a maximum of approximately 80,000 pounds of steam per hour can be bled from each machine. Installed in each bleeder connection is a butterfly type of nonreturn valve of our own design and a 20 inch Atwood and Morrill reducing valve designed to maintain a constant pressure on the low pressure main irrespective of the variations in the pressure at the first stage of the turbine. The operation of these machines has been found to be very satisfactory.

Besides the 25 cycle turbo-generators, there are two 10,000 K. W., 60 cycle, 1800 R. P. M. machines and one 7500 K. W., 60 cycle, 1800 R. P. M. machine, all manufactured by the General Electric Company. These machines weigh from approximately 130 to 190 tons apiece, the revolving

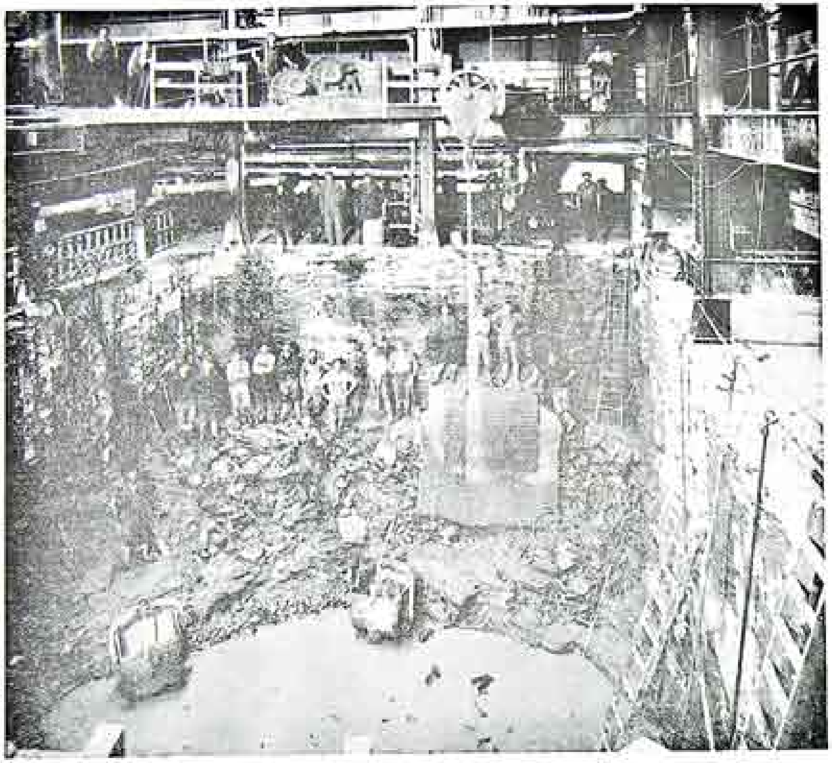


Fig. 8. Rock Excavation for Condenser Pit at Station 3

elements weighing in the neighborhood of 30 tons. With the very high speed at which these machines run and the weight of the revolving elements, extreme care is necessary in balancing to insure a smooth running machine. This balancing is done by changing the location of small weights weighing only a few ounces apiece, on the periphery of the revolving wheels of the turbine, and so delicately is the adjusment made that a nickle can be balanced on edge on the foundation of the machine when it is running.

Considerable attention has been devoted to safeguarding the operators in the station. The switchboards have been entirely enclosed so that a bursting steam pipe would not affect the operators on the galleries. The principal valves in the steam mains have been equipped with motor drive so that they can be operated from a distant point. In case of a serious accident at any time, the steam could thus be shut off from a safe distance and any further damage be stopped. Overspeed emergency governors are installed on rotative apparatus so as to prevent runaways.

Figure 4 shows graphically the marginal character of the generating load which Station 3 carries. Called upon at times to carry 75% of the Company's total load, the Station during 50% of the time is

standing idle. Even 90% of the time as much as 60% of the generating capacity is idle. This large investment of approximately $3,000,000 is required to insure continuous service to our customers during periods of low water or breakdown of generating capacity. Not only is it necessary to install this equipment but it is necessary to maintain a skilled operating force of sufficient size to operate the station to capacity throughout the year as it is impossible to predict for even a short time in advance, the load which will be thrown on the station.

The table (page 150) gives in a condensed form the operating results for each year from 1910 to 1920, the figures for 1920 being for ten months. This table brings out some interesting results.

In August 1918 Station 3 generated more kilowatt hours than was generated by all the Company's electric stations in any year period prior to 1913.

Although the installed generating capacity in kilowatts increased 233% from 1910 to 1920, the boiler capacity required to operate this higher generating capacity increased only 31%.

The maximum monthly output increased 313½% although the installed generating capacity required for this generation increased only 233% or 80% less than the generation.

Although the coal costs increased 82%, the cost of coal per kilowatt hour due to more efficient apparatus and better operation decreased 41½%.

While the installed generating capacity in the engine room increased 233%, the cost of engine room labor increased only 57% due to the use of larger units and simpler design.

Although boiler room labor increased 250% and engine room labor 57%, the cost of boiler and engine room labor per kilowatt hour decreased 59½%.

Based on the index figures used by the Department of Labor, the average rate of pay from 1910 to 1920 increased 74.7%. At the same time our unit cost of labor per kilowatt hour decreased 59½%.

These operating figures show the wisdom of the Management in adopting the policy of extending our steam generating equipment and the soundness of the engineering design, construction and operation.

Figure 6 shows graphically the increase in cost of coal per ton and the decrease in cost of coal per kilowatt hour from 1910 to 1920. The decrease in cost of coal per kilowatt hour from 1913 to 1914 was due to the better operation of the more efficient additions made to Station 3 over the old equipment displaced. In 1917 there was a sharp rise in coal prices with a corresponding rise in cost of coal per kilowatt hour.

Figure 7 shows graphically the relation between labor rates based on figures taken from the reports of the Department of Labor and our engine and boiler room labor costs per kilowatt hour As in the case of figure eight, the drop off in kilowatt hour cost in 1914 is due to the better operation of the additional more efficient capacity installed at Station 3.

The increase in kilowatt hour costs in 1915 was due to the very low kilowatt hour generation for that year. The sharp decrease in 1916 was due to the large kilowatt hour generation for that year, being the heaviest generation of any year up to that date. In 1917 although labor rates increased materially, the kilowatt hour generation likewise increased and the kilowatt hour costs changed only a small amount. In 1918 labor rates rose still more sharply but this year was a year of unusually heavy generation as we were feeding power back into the Niagara system instead of taking power from it. This gave us an unusually good load factor so that the kilowatt hour generation increased

Fig. 9. Boilers, Superheaters and Stokers at Station 3

more rapidly than labor rates and there was a slight reduction in cost per kilowatt hour. In 1919 labor rates continued to rise and the generation fell off to less than half of the 1918 generation, due to the dropping off of the war load, the fact that the Niagara system was not taking power from us and because of unusually good water conditions in the river; the net result was a very great increase in labor cost per kilowatt hour. In 1920 labor rates again rose but our generation likewise increased due to

discontinuance of Niagara service and poorer water conditions with a correspondingly large decrease in cost per kilowatt hour.

It should be remembered that Station 3 is used not only for the purpose of generating current but also generates a very large amount of steam which leaves the Station through our high or low pressure steam distributing system to be used by our industrial and heating steam customers. The costs given in the table have been corrected for the steam sendout as far as possible. It is, however, extremely difficult to segregate certain operating charges and assign certain definite portions to the generation of power and other definite portions to the generation of steam. There is a definite advantage derived from this combination load on the operation of the station as a whole, i. e., due to the steam generated for heating and industrial purposes, the electrical load is carried more economically than would otherwise be the case and the converse of this is true. Therefore, the division of certain costs is not capable of absolutely definite assignment, and comparisons made between the figures given and figures for other straight electrical generating stations are likely to be misleading.

IRREFUTABLE LOGIC

"The great majority of people affected have realized that the utilities' expenses like their own have expanded, compelling increased revenues. There are some, however, who cheerfully pay $12 for a pair of shoes for which they formerly paid $5, 50 cents for a beefsteak for which they formerly paid 20 cents, and who complain bitterly if the cost of a utility's commodity is increased 25 cents per month, and accuse the Commission of favoritism toward the company if any increase whatever is allowed to meet growing wages and material prices. They seem to forget that the bulk of the expense in operating most utilities is labor, and that each member of the great army engaged in rendering public service is compelled to purchase the necessities of life at the same high cost that confronts us all. In fact, increases have been permitted by this Commission for the sole purpose of affording employees a living wage.

"We realize that it is not a popular thing to increase rates. It would be easy to deny such applications and pose dramatically as friends of the people, standing between them and corporate greed. We occupy a position of great responsibility. We have it in our power to bring ruin and disaster to many hundreds of utilities and rend the financial fabric of the state. It is very difficult now to secure capital for public service enterprise, and this Commission, by a rash stroke of the pen, could make it impossible in the state of Washington. We have endeavored in these trying times to save legitimate investment in utility properties from ruin, preserve the necessary public service to the people, and, at the same time, be just and fair to the patrons who pay the price. If we should yield to the clamor of politicians, whose stock in trade is reckless denunciation of public utilities and abuse of the Commission for permitting them to live, the results would frighten even those irresponsible agitators."

From opinion in Case of Wenatchee v Central Washington Gas Co. P. U. R. 1920 C 871. Decided by Washington Public Service Commission.

GAS AND ELECTRIC NEWS

ROCHESTER GAS & ELECTRIC CORPORATION
34 Clinton Ave. N., Rochester, N. Y.

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(Home Economics Bureau, Chamber of Commerce)

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"The truth, the whole truth and nothing but the truth."

—From General Oath of Witness.

Company Information

OUR innovation of last month, in sending this magazine to all stockholders of the Corporation, was very obviously to the benefit of all concerned. We are consequently sending copies of this issue to all stockholders. Following closely the receipt of Series B Preferred Stock Dividend No. 11 it will probably be again received with interest and satisfaction.

The necessity for reasonable brevity requires comparatively brief consideration of many of the subjects treated in this and other issues. Accordingly interested stockholders are invited to ask for additional information on subjects having a special appeal, to the end that each investor in the Company may have an accurate and satisfactory conception of it.

This technical and complex business absorbing thirty million dollars of capital, together with the undivided energies of thirteen hundred employees has scores of major operations and hundreds of less important ramifications. It is the earnest desire of the management of the Company that stockholders, employees and public alike become as fully informed as possible concerning all of them.

Romance in Business

THE Gas and Electric Industries are truly, "Romances of Business." Each together with other vast Public Utility enterprises has been built up step by step by hard labor from simple beginnings based upon the elementary visions of scientific investigators when the scientific world was young. From laboratory toys there has been evolved the complex and ponderous systems which are to a large extent the burden bearers of the modern world.

There is for some of us a keen intellectual gratification in this mastery of nature. Every art and profession, every trade and almost every kind of human labor has made its contribution to and is served by our business. Electricity, itself unknown, and Gas, whose molecular structure we do not fully understand, are very intimately connected with all human activity. Ideas have perpetrated themselves in our immensely valuable concrete tools. Ideals, fostered through the spirit of scientific truth have broadened into our equally valuable personal relations with each other. "Service" has through our industry, received its true interpretation.

Our modern scientists tell us that, in connection with our business, "We have simply scratched the surface." We are then the torch bearers of our age, utilizing the work of our predecessors in contributing to the comfort of our fellow men today, and laying the foundation for greater things tomorrow.

As the romance of the business appeals to the imagination, so the business probabilities appeal to the intellect. The progress of the Industry will be continuous and upward. It will continue to be a satisfying lifework for the ambitious, and a safe and profitable investment for the prudent and thrifty.

"Christmas comes but once a year
And when it comes it brings good cheer!"

WHAT is Christmas to a business organization? It may be many things, but it certainly is a holiday of importance.

To Christianity we owe much of our modern civilization. Through it the world is a better place to live in, and a better place to do business. Regardless of its promises for the hereafter it enriches life today.

As Christianity makes our Company possible, so the Company, in common with other Public Utilities, adds much to the satisfactions of the holiday. Through light, heat, power, transportation and the transmission of intelligence, friends and relatives are brought closer together, are fed, warmed and entertained. From the luxuries of the past to the necessities of today our products have assumed colossal proportions in war and peace, in business and recreation, in culture, ethics and religion.

While our business consists in the practical transformation of the material resourses of the earth, we are cognizant of our obligation to spiritual forces. To meet this obligation we operate insofar as possible through the cheerful observance of the most enlightened ethics.

Life's Greatest Treasure

WHEN one is well he seldom voluntarily pays much attention to health. This is especially true of the young, but it is true to a remarkable extent among the middle aged, who have by experience learned many of life's other pointed lessons.

In one sense it is a useless, thankless and presumptuous task to continually remind our patient readers of their obligation to safeguard health, but the daily contact which the nature of our work makes for us with the victims of careless living constrains us to preach and preach again.

We do not in general fail to keep our health through ignorance! We know the amazingly few and simple rules of health. They have been bulletined, placarded, and printed until it is literally true that "He who runs may read!" Must we keep on learning, only through bitter and continued self experience, that good health is life's greatest treasure, that it is within the power of most of us to acquire and conserve it, but that far too many learn too late?

Dr. Hatfield Says

"Getting up ten minutes earlier in the morning will add greatly to your efficiency throughout the day and mean much more than that amount of time stolen from yourself for an extra nap. Persons getting out of bed with just enough time to grab their clothes, hastily throw them on and gorge down a sandwich, with a cup of coffee too hot, feeling all the time the push and strain of the hour to be at work, will punish themselves all the morning with a nervousness, headache, indigestion, and a consequent low efficiency. This will last not only through the morning, but all during the day—for a bad start in the morning gives a poor appetite at noon, and, as a result, a bad day.

"Learn to eat for the good of your mind and body, and not, as if it were an act to get over three times a day."

—*The Lilly Balance.*

New Cant-Hook for Handling Concrete Poles

THERE is in use at the Company's Concrete Pole Yard a new cant-hook for handling poles that is the invention of the foreman, Mr. John F. Jennyjohn.

From the time a pole is removed from the mold until it is placed in the

Mr. Jennyjohn using new Cant-Hook. Old Type seen near his feet.

ground at its destination it must undergo a great deal of handling, and since a pole weighs from 1650 to 2000 lbs. and is upwards of 30 feet long, it is no simple job to throw them on and off wagons and cars, as is the case with wooden poles.

The answer is the cant-hook, but there was one serious disadvantage. The hook would bite deeply into the concrete and quite often when considerable pressure was applied, pull out a large chunk from the pole. This happened in spite of great care, and it was then that Mr. Jennyjohn decided to experiment. The product of his efforts along this line is a cant-hook with four teeth that extend over a distance of about six inches decreasing the strain on the pole by increasing the points of contact, and which according to Mr. Jennyjohn has never chipped a pole. It is particularly adapted for handling poles immediately after they are taken from the mold because at this stage they are still comparatively soft and are easily chipped.

In the course of a year this improvement should effect a goodly saving in time and money.

Courtesy of Andrew Street Operator

ONE Saturday morning the writer happened to be at a new plant just outside the city, where the Home phone was the only one installed. I called for Lamey's tool room and was informed by the Andrew Operator that they had only the Bell phone. Upon finding that the message was important, she called the tool room on the Bell phone, delivered the message and gave me the information desired.

This was good service and very much appreciated and worthy of mention.

Signed,
An employee.

For Sale

TWO Kingston Carburetors and a Holley—$2.00 each.
Two Storage Batteries (6 and 8 volts)—$6.00 and $7.00.
30 Ampere Hour for ignition or lighting.
One hand Klaxon—$ .75.
Joseph R. Villard (Station No. 3)
525 Hague St.

I. A. R. A. Christmas Party and Dance

December 28th

THE governing bodies of the Industrial Athletic and Recreation Association have approved plans for the First Annual Christmas Party and Dance of the Association, under the auspices of Co.'s A, G, H and Machine Gun Co., Third Regiment, Inf., N. Y. N. G. at the New York State Armory, Tuesday, December 28th.

Music will be furnished by Raymond Fagan's 35 piece orchestra. There will be dancing from 9:00 to 1:00 and a special entertainment at 11:00 o'clock.

Among the novelties planned are a huge Xmas tree and a jolly Santa Claus, special prizes for ladies and souvenirs for everybody. The decorations will be unique and the orchestra placed on a special stand in the center of the hall.

Among the presents that Santa Claus will distribute from the big tree will be the pennants to the winning teams in the 1920 Association activities: *Tennis, Men's and Girls', Rochester Gas & Electric Corporation.* Quoits, Gleason Works; Baseball, Men's, Art in Buttons, Inc., Vacuum Oil Co., National Brass Mfg. Co.; Girls', Alderman, Fairchild Co. and Wollensak Optical Co.

Every member of the pennant winning teams will be honored with an Association Honor Legion Medal and Certificate and will be guests of the Association for the evening. In addition to Honor Legion Medals, the members of the championship baseball teams will be presented with special gold or silver trophies.

Refreshing!

SECRETARY of State Francis M. Hugo says that the following are real answers made to questions in a recent automobile driver's license examination:

Q. If your engine stalls going up hill what do you do?
A. Try and start it.
Q. In letting the car stand, which side should be next to the curbing?
A. The side that is nearest the sidewalk.
Q. What should you do if the steering gear broke?
A. Go to the nearest garage and have the man fix it.
Q. Which has the right of way, a car on a main thoroughfare or a car on a bisecting street, when they approach?
A. The one that gets there first.
Q. What is the proper precaution to take when backing your car?
A. Reverse your engine.
Q. What is the accelerator?
A. The name of something that has something to do with something inside of the car.
Q. What is the charging indicator?
A. Your bill for garage, gas and oil.
Q. What is the first rule of the road?
A. Don't run into anything.
Q. Where should you have your license numbers?
A. On your car.
Q. What is meant by "short circuit?"
A. Going around the shortest way.
Q. When the batteries run out, what must you do?
A. Get them back or get new ones.

Interesting Figures

AT the December 1919 meeting of the Association of Life Insurance Presidents it was reported that there were 53,221,457 Life Insurance policies in force in this country representing $29,797,000,000 outstanding insurance. More than $500,000,000 of the Assets of these companies are invested in Electric Light and Power Company securities.

Housekeeping Suggestions

THERE is one day of the year when the Housewife forgets all about the so called drudgery of the kitchen, and falls to with a will that could only be guided by a light and happy spirit. This day is Christmas. Days ahead she begins to plan her menu and with a great deal of satisfaction thinks of the way Dad likes this, and Sister that, and what little Tommy likes best. Sometimes she plans an unusual dish and keeps it a secret for a surprise on Christmas Day. Christmas Eve the larder is full to overflowing; everything is put away neatly. The Day arrives and with all the excitement of opening gifts and watching the antics of the Kiddies, mother must spend part of her time in the kitchen where she is starting the meal of the year—Christmas Day Dinner.

What fun she has! With sleeves rolled up, and a gingham apron on she is here and there, tasting, seasoning and stirring, and with certain things she is so careful. They have got to be just right you know because this is Christmas Dinner!

There's no fretting about lack of help this day. She would rather "everybody run along and have a good time." She is having her good time and anticipates more when she announces to the house, "Christmas Dinner is served!"

❖

MENUS FOR CHRISTMAS OR NEW YEAR'S DINNER

No. 1

Oyster Soup
Roast Duck — Potato Stuffing
Currant Mint Sauce
Mashed Potatoes — Creamed Onions
Philadelphia Relish
Plum Pudding — Coffee

No. 2

Stuffed Shoulder of Pork
Apple Compote
Browned Potatoes — Hubbard Squash
Cabbage and Peanut Salad
Pumpkin Pie — Coffee

No. 3

Oysters
Roast Chicken — Dressing
Cranberry Sauce
Candied Sweet Potatoes — Asparagus
Pineapple and marshmallow salad
Pumpkin Pie — Coffee

Potato Stuffing
(For Goose or Duck)

2 cups hot mashed potato
1¼ cups soft stale bread crumbs
¼ cup finely chopped fat salt pork
1 finely chopped onion — 1½ teaspoon salt
⅓ cup butter — 1 egg
1 teaspoon sage or poultry seasoning

Cook onion in butter for five minutes, then mix all ingredients together.

Stuffed Shoulder of Pork Stuffing

Have bone taken out of shoulder, fill the cavity with stuffing and sew into shape.

Stuffing

2 cups soft bread crumbs
¼ cup melted butter — 1 onion chopped
1 tablespoon poultry — Salt and pepper
1 teaspoon chopped parsley — Hot Water

Mix ingredients in order, cooking the onion in butter for about five minutes. If moist dressing is preferred add hot water until of the right consistency.

Sour Cream Dressing

1 cup sour cream — 1 tablespoon flour
4 teaspoons sugar — 1 teaspoon mustard
1 teaspoon salt — 1 egg

Put all together and beat with Dover beater. Add 3 tablespoons vinegar and cook in double boiler until creamy.

Cabbage and Peanut Salad

Shred cabbage and over it put chopped peanuts. Serve with Sour Cream Dressing.

Plum Pudding

1 c. chopped suet — 1 tsp. cinnamon
1 c. sour milk — 1 tsp. salt
2 tsp. soda — 2 lbs. fruit
1 c. molasses — 1 lb. raisins
3 c. flour — ½ c. currants
1 tsp. cloves — ½ lb. citron, lemon and orange peel

Steam four hours

Glazed Sweet Potatoes

Wash and pare six medium sizes potatoes. Cook 10 minutes in boiling salted water. Drain, cut in thick slices, and put in buttered pan. Make syrup by boiling 3 minutes ½ cup sugar and four tablespoons water; add one tablespoon butter. Brush potatoes with syrup and bake 40 minutes, basting twice with remaining liquid.

Pumpkin Pie

1 cup pumpkin — 1 tablespoon molasses
1 cup milk — 2 eggs
½ cup sugar — 1 teaspoon cinnamon
½ teaspoon salt

In place of the molasses and cinnamon, one-fourth cup of orange marmalade may be added or one-fourth of cup ginger syrup and finely chopped preserved ginger.

Fondant: (I)

Put 2c. granulated sugar, 1 c. boiling water, add 1/8 tsp. cream tartar in small saucepan, stir until sugar is dissolved. Then boil for 10 min. till soft ball forms being careful not to move or jar the saucepan. As crystals form on sides of pan wipe off with sponge or brush dipped in cold water. When done pour out on large platter or marble slab that has been moistened with cold water; cool till the finger can be held in syrup. Begin to stir with wooden spoon till a white, creamy mass is formed, then knead. It may be used at once, but it is better after standing till next day. It will keep for weeks in an air-tight jar. Always cover fondant to prevent crust forming.

Coffee Fondant: (II)

Use strong clear coffee for liquid.

Maple Fondant: (III)

1⅓ lbs. maple sugar, 1 cup hot water, 1¼ lbs. granulated sugar ¼ tsp. cream tartar. Boil and work same as white fondant.

Salted Almonds:

Blanch ¼ lb. almonds, dry thoroughly. Put ½ c. olive oil in small saucepan; when hot put in ¼ of the almonds and dry till a delicate brown, stirring to keep in motion. Remove with skimmer taking as little oil as possible. Drain on brown paper and sprinkle with salt.

Stuffed Dates:

Remove stones and fill cavities with English walnuts, pecans or blanched almonds. Nuts may be salted, left whole or chopped. Roll dates, after stuffing in granulated sugar. Marshmallows cut in pieces and nuts make a good filling.

Nut Creams:

Mix chopped nuts of any kind into flavored fondant, then roll into layer ¾ inch thick. Cut into squares.

Chocolate Jumbles

½ cup butter — 1 cup sugar
2 sqs. choc., grated — 2 eggs
2 tsps. baking pwder. — 2 c. flour and enough
1 tablespoon milk — to roll out
1 teaspoon vanilla.

Mix in the order given, toss on to a floured board and roll to ½ inch in thickness. Cut out with a doughnut or fancy cookie cutter. Just before putting into the oven, dust over with granulated sugar and bake ten minutes.

Vanilla Cookies

½ cup butter — ¼ cup milk
1 cup sugar — 2 cups flour
1 egg — 3 tsp. baking powder

Cream the butter, add sugar, egg well beaten, milk and vanilla. Mix and sift dry ingredients and add to first mixture. Chill thoroughly, toss mixture on well floured board; roll thin and cut with small round cutter; place on greased sheet and bake in moderate oven.

Sand Tarts

½ cup butter — 2 tsps. baking powder
1 c. sugar — White 1 egg
1 egg — Blanched almonds
1¾ cups flour — 1 tablespoon sugar
¼ teaspoon cinnamon

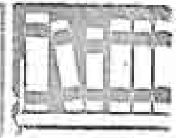
Cream the butter, add sugar gradually, and egg well beaten; then add flour mixed and sifted with baking powder. Chill, toss one-half mixture on a floured board, and roll one-eighth inch thick. Shape with a doughnut cutter. Brush over with white of egg, and sprinkle with sugar mixed with cinnamon. Split almonds, and arrange three halves on each at equal distances. Place on a buttered sheet, and bake eight minutes in a slow oven.

Snickerdoodles

½ cup sugar — ½ cup butter
1 egg — ½ teaspoon soda
½ cup cold water — 1½ cups flour
¼ teaspoon cloves — ½ teaspoon cinnamon
½ lb. dates or raisins — ⅓ lb. nuts,
(peanuts are good)

Cream the butter, add sugar, and egg. Sift the flour, soda and spices, add these and water to mixture. Lastly add the fruit and nuts which have been covered with a little flour. Drop from spoon onto greased pan and bake in a hot oven.

Auditing



New Business

Net Increase in Consumers in First Ten Months of 1920

	Dec.31,1919	Oct.31,1920	Increase
Gas.....	79,816	81,149	1,333
Electric..	30,978	33,976	2,998
Steam...	75	75	
	110,869	115,200	4,331

Net Increase in Consumers in Twelve Months Ending Oct. 31st, 1920

	Oct.31,1919	Oct.31,1920	Increase
Gas.....	79,471	81,149	1,678
Electric..	30,469	33,976	3,507
Steam...	75	75	
	110,015	115,200	5,185

Net Increase in Consumers by Months

	1918	*1919*	*1920*
Incr. in Jan...	54	* 69	345
Incr. in Feb...	56	*463	246
Incr. in March.	183	*277	341
Incr. in April..	322	307	509
Incr. in May..	508	417	601
Incr. in June..	292	440	526
Inrc. in July...	* 53	285	427
Incr. in August	* 17	416	402
Incr. in Sept...	147	470	403
Incr. in Oct....	125	472	531
	1,617	1,998	4,331

*Denotes Decrease

Miscellaneous Data

	Oct. 31 1920	Oct. 31 1919	Incr.
Miles of Gas Main....	521	516	5
Miles of Overhead Line	2,027	1,930	97
Miles of Underground Cable.............	1,193	1,142	51
Miles of Subway Duct.	1,014	998	16
No. of St. Arc Lamps..	1,615	1,647	*32
No. of St. Inc. Lamps.	9,053	8,906	147
Total No. of St. Lamps	10,668	10,553	115
No. of Employees.....	1,307	1,283	24

Statement of Consumers by Departments as of Oct. 31st.

Oct. 31	Gas	Elec.	Steam	Total	Incr.
1908	40,736	6,346	..	47,082	
1909	44,680	7,189	..	51,869	4,787
1910	50,866	8,584	..	59,450	7,581
1911	56,179	10,442	17	66,638	7,188
1912	60,868	12,849	20	73,737	7,099
1913	66,133	15,772	23	81,928	8,191
1914	69,654	18,140	30	87,824	5,896
1915	70,968	21,714	39	92,721	4,897
1916	75,121	24,782	41	99,944	7,223
1917	78,634	27,460	51	106,145	6,201
1918	79,130	28,881	75	108,086	1,941
1919	79,471	30,469	75	110,015	1,929
1920	81,149	33,976	75	115,200	5,185
Increase in 12 yrs.	40,413	27,630	75	68,118	68,118

E. B. A. For November, 1920

Balance 1st of Month...............		$4,641.72
Dues—Members............	$826.12	
Dues—Company............	826.12	
Fees—Members............	47.00	
Fees—Company............	47.00	
Assmt. No. 36—Members....	.25	
Assmt. No. 36—Company....	.25	
Int. on Bk. Bals. & Invest...	42.50	
Total Receipts............		$1,789.24
Total Receipts Plus Balance......		$6,430.96

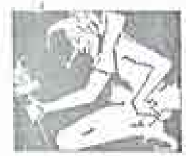
Disbursements

Sick Benefits...............	$613.62	
Accidents Off Duty Benefits.	4.18	
Accidents On Duty Benefits.	105.25	
Medical Examiner's Expense.	21.00	
Mem. Military & Naval Exp.	1.16	
Total Payments....................		$ 745.21
Balance on Hand................		$5,685.75

Membership

Members Oct. 31, 1920................		1007
Affiliated Nov. 1920................	22	
Terminated Nov. 1920................	17	
Gain Nov. 1920....................	—	5
Membership, Nov. 30, 1920..........		1012

	Oct., 1920	Oct., 1919	Increase
Amount of Payroll..........................	$186,210.63	$159,646.69	$26,563.94
K. W. H. Generated—Steam..................	8,145,891	4,578,209	3,567,682
K. W. H. Generated—Hydraulic..............	9,517,410	8,695,406	822,004
M. Cu. Ft. Coal Gas Produced................	142,617	143,874	* 1,257
M. Cu. Ft. Water Gas Produced..............	141,393	105,968	35,425
Tons Gas Coal Used..........................	11,877	13,484	1,607
Gallons Gas Oil Used.........................	501,411	418,702	82,709
Tons Steam Coal Used........................	13,194	8,519	4,675
Tons Coke Made..............................	8,300	9,261	* 961
Gallons Bengas Made.........................	54,327	37,353	16,974



Fumes and Flashes

WORTH STUDYING

A lady observing a mule owned by a colored boy asked: "What do you call your mule?"

"I calls him 'Utility.'"

"How did you come to give him such a name?"

"I'se been studyin' de animal and readin' de papers. Dat mule gets mo' blame an' abuse dan anything else in de city, an' goes ahead doin' his level best just de same."

—*Selected*

AND THEN THE STORM BROKE.

The small boy of the family announced to his mother that he had been having the finest kind of a time playing postman.

"How do you play postman?" asked his mother.

"Why, I gave every woman in the block a letter."

"Yes, but where did you get the letters, son?"

"I found them in the attic, mother, all tied up with a blue ribbon." —*R. M. S.*

A CLEVER REJOINDER

A boastful youngster was telling a group of boys what a great man his father was:

"Why just think of it My father had the chair of Applied Physics at Harvard."

"That's nuthin" piped up a small dirty faced lad. "My Dad had the chair of Applied Electricity at Sing Sing."

—*R. M. S.*

WHAT CLUB DOES HE MEAN?

Says Henry M. Stern of Michaels, Stern & Co.:

To those who talk and talk and talk
This adage will appeal.—
The steam that blows the whistle
Will never turn a wheel.

—*Bumblebee.*

Sign in front of a Rochester garage—"Genuine Ford Fenders." Are there any imitations? Hank Ford should put his signature on each of his fenders, otherwise some unscrupulous dealer may try to palm off a Chandler fender on the public.

—*Bumblebee.*

If you've got to use a hammer, build a house. —*Bumblebee.*

HIS RIGHT IDEA

"What would you do if I turned you down?" she asked shyly, as they sat on the parlor sofa.

The young man looked straight ahead, but said nothing. After a few moments of silence she nudged him with her elbow and said: "Didn't you hear my question?"

He looked around, apprehensively.

"I beg your pardon," he replied. "I thought you were addressing the gas."

—*St. Louis Republic.*

MAKING IT PLAIN

"A colored first sergeant was talking to his company. Every few words he would call them 'Niggers' The colonel came by, and taking the top-cutter one side, said: 'Sergeant, in the Army we do not call men "niggers" but when you wish to speak to them more directly, call them "men."' The sergeant faced his company, while the colonel ducked behind the line to listen. Said the Sergeant, 'De cunnel ob dis regiment jes tole me dat when I speaks to yo-all I mustn't say "Niggahs" but must call yo-all "Men." But I wants you to understan' dat when I calls yo "Men" I means "Niggah."'"

—*Trumbull Cheer.*

A CRUEL BLOW

1st Office Boy: I told the boss to look at the circles under my eyes and see if I didn't need a vacation.

2nd Office Boy: What did he say?

1st Office Boy: He said I needed a bar of soap!

R. M. S.

"YOU CAN'T FOOL THEM"

"Lawdy, niggah, what am dat er buzzin' 'rund mah haid?"

"Dat am er hoss-fly."

"Er hoss-fly? What—what am dat?"

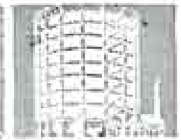
"Why, er hoss-fly is a lil' fly wot buzzes 'round hosses, cows an' jack-asses."

"Look aheah, niggah, does you mean t' 'sinuate dat 'I ma jack-ass?"

"No, sar, chil. An don' mean t' 'sinuate nuffin. But you-all can't fool er hoss-fly."

—*Selected*

Gas Manufacture



THE Second Annual Convention of the American Gas Association opened at the Hotel Pennsylvania in New York City on Tuesday, November 16, President George B. Cortelyou presiding.

The program called for a general session in the morning of Tuesday, Wednesday and Thursday. Sectional meetings were scheduled for the afternoons of the same days.

The general session had a number of interesting and important features including the President's address, the report of Secretary-Engineer Fogg and addresses by a number of prominent men. These have been fully reported in the various gas journals and are worth reading.

The Technical section meetings were very well attended and the reports and papers elicited a good deal of lively discussion. Perhaps the most generally discussed was the report of the Purification Committee, which was summarized by Mr. Stone, Chairman of the committee. The committee has approached many puzzling problems and made a big advance towards their solution. It was unfortunate that the report of the Carbonization Committee, of which Mr. Haftenkamp was chairman, did not receive advance circulation. It reviews the progress in coal distillation and describes in detail the unique development at Chester, Pa.

Other interesting reports covered the subjects of disposal of plant waste liquors, use of concrete in Gas Works, status of the gas oil situation, and description of the Cutler-Hammer Recording Calorimeter.

The manufacturers exhibit in the roof garden was excellent. Particularly interesting to most operating men was the Cutler-Hammer Co. exhibit of its Recording Calorimeter. Present indications are that they have developed an instrument which will meet a very urgent demand.

The social features included a dinner for the committee chairmen, the President's reception and dance, the banquet, and a golf match.

The Rochester men who attended were Messrs. Scobell, Haftenkamp, Lundgaard, MacSweeney, Hellen, Brown, Taillie, Hoddick, Stone, Earle.

❖

ONE of the most interesting studies in connection with the operation of the Coal Gas Plant at West Station was the production of a maximum quantity of gas having a heating value at least equivalent to the State Standard of 585 heat units per cubic foot of gas.

The first phase was attained with comparative ease, and was established early in the history of the plant.

The second phase, that of the heat value, required more intensive study. Without enlarging upon the details involved, it may be said to have been solved by enlisting the co-operation of the operating force in reducing to a minimum the infiltration of air around the multiplicity of valves, doors, and fittings which make up the plant equipment. This was done by giving them frequent results as to the heating value and chemical analysis of the gas.

Its results were reflected immediately in the reduction of oil used in the water gas process, for an abnormal heating value of water gas had to be maintained to make up for a subnormal heating value in the coal gas, so that the mixture of the two gases delivered to the consumer, would meet the state requirements.

During the first ten months of 1920, the oil saving, directly attributable to the better coal gas value, has amounted to 285,967 gallons; at the average value of gas oil, for the same period, the economy amounts to $30,000.

❖

The new Connersville High Pressure Booster at East Station was put into service on December 13. This has a capacity of 750,000 cubic feet per hour at a pressure of 5 lbs. per square inch. It is driven by a 300 H. P. 440 volt A. C. motor, direct connected to the pump through a set of herringbone gears. The motor speed is 650 R. P. M., and the pump speed 300 R. P. M.

❖

During part of November and December, No. 3 water gas machine was operated on exhaust steam with entire success. The steam was supplied from the outlet of the steam turbine at Station 34. The operation of this turbine at Station 34, by which power is developed from the high pressure steam before it is delivered into the low pressure steam system, has possibilities of a considerable economy to this Company.

❖

Three boilers at East Station are now operating on water gas tar emulsion. Also the waste heat boiler is now in service on No. 4 water gas machine.

Industrial Sales

Wm. Buedingen & Son, 33 Canal St. are moving to their new factory on North Clinton Ave. near Norton St. and have signed for a 100 KW. alternating current service to supply approximately 35 HP. in motors, approximately 75 electrically heated glue pots and 25 KW. in lights.

The Pulver Gum Company, Inc. have rented the factory now occupied by Wm. Buedingen & Son, 33 Canal St. and will purchase from this Company steam for heating, electricity for lights and approximately 45 HP. in motors.

❖

The Sargent-Greenleaf Company has installed three gas fired brass melting furnaces in their new foundry at Joseph Ave. and Norton St. These furnaces are of the pit-crucible type, 100 lbs. capacity, and are equipped with recuperators and ratiometers.

The monthly gas consumption will approximate 300,000 cubic feet.

❖

The Kellogg-Anstice Companies' new plant on Humboldt St. has recently been occupied and will shortly be supplied with permanent electric service from a bank of transformers 300 KVA. in capacity.

The energy for both plants will be sold to the Kellogg Company and the portion used by the Anstice Company will be metered from the former's switchboard.

It seems reasonable to predict that in view of the present activities that a larger transformer installation will be required if other electrical applications are to go through as contemplated.

❖

Bastian Bros. 69 Mt. Hope Ave. are moving from Mt. Hope Ave. to their new factory on Clinton Ave. North near Norton St. They are renting their old factory to different industrial concerns. Two of their future tenants have signed for alternating current service. These are as follows:

Erro-No Inc. 20 KW. for motors, spot welder and lights.

The Good Luck Food Company, Inc. 50 KW. service for 32 HP. in motors and the necessary lights.

Personals

Gas & Electric News wishes all its friends and readers a Merry Christmas and a Happy New Year.

On Thanksgiving Day at the Immaculate Conception Church, Miss Theresa A. Murphy became the bride of Mr. George Quick, and are now at home to friends at 85 Tolsom Place. Mrs. Quick was a member of the Collection Department of the Company.

Mrs. James Skuse died at her home Sunday, October 31st. She is survived by her husband and son John who represents the Ruud Heater Company and was formerly connected with the Domestic Sales Department.

Messrs. J. P. MacSweeney, H. J. Taillie and J. W. Brown, of the Domestic Sales Department, attended the meeting of the American Gas Association held in the Pennsylvania Hotel, New York City, November 15-20.

Mr. J. P. MacSweeney, Supt. of Domestic Sales Department, has been doing his duty as a Supreme Court trial juror.

Mrs. Hoffman of the Domestic Sales Department, while demonstrating a washing machine at the home of one of our consumers heard the following:

Little Girl: Why mother I never saw you smiling on wash day before.
Mother: Why shouldn't I with a washing machine to do the hard work.

E-Nuff-sed

Miss Arleen Koehler, of the Domestic Sales Department, claims that her father raises the finest chickens in the state, and the writer has heard her claim backed up by some who ate Koehler chicken Thanksgiving.

A handkerchief shower for Miss Frances Moore was held at the residence of Mrs. Hoffman of the Domestic Sales Dept.

A variety shower for Miss Theresa Murphy was engineered by the Misses Mary Killeen and Marion Rogers of the Domestic Sales Department.

C. F. Schake of the Domestic Sales Department has returned to his desk after undergoing a mastoid operation.

Uncle John Almstead of the Domestic Sales Department was called from the cellar of his home by Mrs. Almstead to look at two large turkey gobblers perched safely on the peak of a house across the way. Uncle John said they were so near and still so far away. This was two days before Thanksgiving Day—still worse.

Mr. George Coleman, head of the Telephone Department, has been put in charge of the Mailing Department with Miss Emma Markel as Assistant. All mail will be sorted and opened on the third floor by Mr. Frank Crandall and sent to the mailing desk on the second floor for distribution.

A recent marriage of much interest to members of this Company was that of Miss Frances E. Moore to Mr. George Weidner of this City. Mrs. Weidner was formerly an employee of this Company as a demonstrator in the Domestic Sales Department. For the last two years she has been associated with the Home Economics Bureau of the Chamber of Commerce where she has contributed each month material for the Housekeeping page of Gas & Electric News.

Mrs. Weidner has a host of friends in the Company who wish her Bon Voyage.

Friends of Mr. Ted Lovick, of the Meter Reading Department, were sorry to learn of the illness and death of his mother, Mrs. Anna Lovick on December 10th.

A Group of the Company's Recent Stock Advertisements