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HELD AT

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steam. We have done a good deal of work on the reduction of moisture in steam, and we feel confident that it can be reduced to a point where sludge will not be troublesome. We think we are near that point now.

As to the moisture conditions at Kips Bay Station, we have installed a special separator on one of the outgoing mains, and we have analyzed the condensate of the trap discharge from that machine and find that it contains less total solids than the drinking water of New York. In other words, it is condensed steam of so little original moisture content that it takes hours to accumulate enough solids for analysis. So we think that we are on the right road. We prefer the internal treating system. Zeolite, in water containing any silicate, would result in a scale that is practically impossible to remove.

NEW PLANTS AND ADDITIONS†

The report this year includes data on nine steam heating stations, covering a wide range, the largest boiler reported having a capacity of 1,000,000 pounds per hour and the smallest 30,000 pounds per hour. (Both installed in 1930.)

The Committee wishes to thank each company reporting for their prompt and complete replies to the questionnaire sent them. It is hoped that they will be more than repaid by having available these tabulations presenting the outstanding features of new installations.

The trend in design has to be taken from the leaders, be they small or large.

There is apparent a definite trend towards the installation of the largest boilers that the systems which they supply can economically justify. Too much study cannot be given to the selection of proper size units.

Continuous boiler blowdown with heat exchanger is becoming general practice. In the Boston plant it was calculated that the heat exchanger, with the continuous blowdown, increased the station operating efficiency by .4 per cent. Existing plants might well look into this possibility of increasing their efficiency.

The most revolutionary trend is towards pulverized fuel. The stoker man immediately yells "Fly Ash," and the pulverized man (don't take

†From the Report of the Committee on Station Operating. Prepared by a sub-committee on New Plants and Additions. The tabular data following are part of this report.

me literally) answers, "Yes, but no cinders." Pulverized fuel is certainly leading the way toward greater boiler output per square foot of ground area.

Unit pulverizers are being preferred to the central system.

It is gratifying to all of us to note that with each new boiler installation we are able to obtain more capacity per square foot of ground area.

A number of plants show very little storage of makeup matter on the property depending upon two or more connections to the city water mains for continuity of service.

Even in these days of high pressure boilers, the pressures remain quite low, a few ranging above 300 pounds, but most of them in the neighborhood of 200 pounds.

In the central heating business the problem remains, not how to build a highly efficient station, but how to build a cheap station, with reasonable efficiency.

(The tabular data of the report on New Plants and Additions begin on the following page.)

NEW PLANTS AND ADDITIONS

GENERAL DATA

	Company Owning the Plant	Name of Plant	Location of Plant	Date of Initial Operating of Equipment Covered by this Report	Capacity in Thousand Pounds of Steam per Hour Leaving the Plant	Probable Ultimate Capacity in Thousand Pounds of Steam per Hour Leaving the Plant
1	The Rochester Gas & Electric Corp.	Lawn Street Sta.	Rochester, N. Y.	November, 1925	400	620
2	The Rochester Gas & Electric Corp.	Lincoln Park Sta.	Rochester, N. Y.	November, 1927	200	570
3	The Milwaukee Elec. Railway and Power Company	East Wells Street Power Plant	East Wells and Edison Sts., Milwaukee, Wis.	Boiler #1-5 Yr. 1898 " #6 1908 " #7-8 1912 " #9 1915 " #10-11 1917 " #13-14 1924 " #15 1926	563	603
4	The Edison Electric Illuminating Co. of Boston	Steam Station S-2	165 Kneeland Street, Boston, Mass.	October 26, 1930	420	1,600
5	Winnipeg Heating Co.	Steam Plant	1120 Dorchester Ave., Winnipeg, Manit.	October 10, 1928	240	240
6	New York Steam Corporation	Kip's Bay Station (Addition)	35th Street and East River, New York City	Boiler #1-3 Yr. 1926 " #4 1927 " #5 Nov. 29, 1930	723 (Addition only) 2,084 (total for plant)	.....
7	City of Winnipeg Hydro Elec. System	Hydro Steam Plant	Amy St., Winnipeg, Manitoba	October, 1924 Boiler #4 Nov., 1930	235 Peak Load January, 1930	500
8	The Detroit Edison Company	Willis Avenue Heating Plant	50 Willis Avenue, West Detroit, Michigan	Boiler #1 Yr. 1916 " #2 1920 " #3 1917 " #5 1922 " #6 1928	417.5	509
9	Consumers' Power Co.	Saginaw Heating Plant	Saginaw, Michigan	October, 1930 (3rd Boiler)	60	90

NEW PLANTS AND ADDITIONS

FUEL DATA

	Company Owning the Plant	Fuel Burned	B.T.U. Per Pound	Maximum Fuel Burned per Day in Tons (2000 lbs.)	Kind of Fuel Handling Equipment
1	The Rochester Gas & Electric Corp.	Bituminous slack from mines in Pittsburgh vicinity	13,670 (Dry)	185	Bucket and apron conveyor.
2	The Rochester Gas & Electric Corp.	Bituminous slack from mines in vicinity of Pittsburgh.	13,670 (Dry)	70	" " " "
3	The Milwaukee Elec. Railway and Power Company	Northern W. Va. and Youghioghney Fields.	12,800 (as received)	550	Mead Morrison bucket conveyor, belt conveyor, screw conveyor and chain belt bucket conveyor.
4	The Edison Electric Illuminating Co. of Boston	New River semi-bituminous	14,050 (as fired)	200	Trucks haul coal to station in 7-ton buckets, crane hoists buckets and dumps into individual bunkers.
5	Winnipeg Heating Co.	Pocohontas Coal	14,000	140	Overhead delivery fuel bunkers.
6	New York Steam Corporation	Bituminous	14,300 (Dry)	800	Traveling tower.
7	City of Winnipeg Hydro Elec. System	"Greenhill" Screenings" from Alberta, Canada	13,000	180	Drag scraper and automatic skip hoist.
8	The Detroit Edison Company	Bituminous Coal	13,270	237	Crane hoists 6 ton buckets from truck to hopper under roof and by belt conveyor to bunker.
9	Consumers' Power Co.	W. Va. Bituminous	13,200 (as fired)	65	Bucket elevator and cross conveyor ove bunkers.

NEW PLANTS AND ADDITIONS

FUEL DATA (Continued)

	Company Owning the Plant	Capacity of Coal Handling Equipment in Tons (2000 lbs.) per Hour	Capacity of Coal Bunkers in Tons (2000 lbs.)	Outside Storage Capacity at Plant in Tons (2000 lbs.)	Is Coal Crushed in Plant?	How is the Coal into the Plant Weighed?
1	The Rochester Gas & Electric Corp.	50	1,000	None	No	Each truck load is weighed.
2	The Rochester Gas & Electric Corp.	50	800	½ acre (not used at present)	No. (Crusher installed, but not used.)	Shippers' weights from coal cars.
3	The Milwaukee Elec. Railway and Power Company	50	1,550	None	For pulverized fuel boilers only.	Avery coal scale.
4	The Edison Electric Illuminating Co. of Boston	70+	300 (per boiler)	None	No	Truck loads weighed at coal- ing station.
5	Winnipeg Heating Co.	None	700	None	No	Truck scales.
6	New York Steam Corporation	350	11,200	None	Yes	Merrick Weightometer.
7	City of Winnipeg Hydro Elec. System	70	160 Raw Coal 4@60 each, Pulver- ized Coal	5,000	Yes	Skip Hoist.
8	The Detroit Edison Company	55	1,146	None	No	Each load weighed at coal- ing station.
9	Consumers' Power Co.	25	3 at 60 each, 1 extra 60	500	No	Each truck load weighed.

NEW PLANTS AND ADDITIONS

FUEL BURNING EQUIPMENT

PULVERIZED FUEL

	Company Owning the Plant	Manufacture	Central or Unit System	Type of Mills	Capacity of Mills in Pounds per Hour	Number of Mills per Boiler
1	The Rochester Gas & Electric Corp.	Combustion Engineering Corporation	Unit	Raymond	Boiler #1 { 2-7000 #/hr. " #2 { 1-2000 #/hr. " #3 { Ditto { 2-8500 #/hr. { 1-2600 #/hr.	3
2	The Rochester Gas & Electric Corp.	Combustion Engineering Corporation	Unit	Raymond	Boilers #1 and #2 1-8500 #/Each 1-2600 #/Boiler	2
3	The Milwaukee Elec. Railway and Power Company	Combustion Engineering Corporation	Both	Roller type and impact unit type	2 roller mills, 5 tons per hour each; 2 impact unit mills, 2 tons per hour each.	2 roller mills supply boilers #1 to #5; 2 impact unit mills serve #15.
4	The Edison Electric Illuminating Co. of Boston	Riley Stoker Company	Unit	#4 Duplex	12,500	2
5	Winnipeg Heating Co.	Strong-Scott Mfg. Company, Ltd.	Atrita pulverizer Unit	Atritas	4,000	1
6	New York Steam Corporation	Combustion Engineering Corporation	Central	Fuller-Lehigh Type B	1-80,000	2
7	City of Winnipeg Hydro Elec. System	Combustion Engineering Corporation. "Lopulco"	Central	Raymond Roller Mills	1-50,000 12,000	1/2
8	The Detroit Edison Company	.....	.....	.....	.....	.....
9	Consumers' Power Co.	None	.....	.....	.....	.....

NEW PLANTS AND ADDITIONS

FUEL BURNING EQUIPMENT (Continued)

PULVERIZED FUEL (Continued)			STOKERS				
	Company Owning the Plant	Type of Burner	Number of Burners per Boiler	Manufacturer	Width of Stoker Between Sidewalls	Length from Front to Rear Wall	Coal Burning Capacity in Lbs. per Hour
1	The Rochester Gas & Electric Corp.	Combustion Engineering, Special Fantail	5	.....	.....	.....	.....
2	The Rochester Gas & Electric Corp.	Combustion Engineering, Special Fantail	3	.....	.....	.....	.....
3	The Milwaukee Elec. Railway and Power Company	Lopulco	2	Riley & Taylor underfeed stokers	Riley stokers Boilers #6-11—11' 10" Taylor stokers Boiler #13 & 14—19' 6"	Riley stokers Boilers #6 to #11—14' 5" Taylor stokers Boilers #13 & #14—18' 6"	4¾ per ft.
4	The Edison Electric Illuminating Co. of Boston	Riley Stoker Company Turbulent #4	4	.....	.....	.....	.....
5	Winnipeg Heating Co.	Strong-Scott	1	.....	Jones A.C. Stokers, 14' 0"	10' 6"	8,000
6	New York Steam Corporation	Lopulco—Corner Fired	16	.....	.....	.....	.....
7	City of Winnipeg Hydro Elec. System	Lopulco "Fantail"	7	.....	.....	.....	.....
8	The Detroit Edison Company	.....	..	Taylor Stokers Mfg. by American Engineering Corp.	#1—13' 2" #2—14' 6" #3—14' 6" #5—19' 11" #6—19' 11"	#1—16' 4" #2—16' 4" #3—16' 8" #5—19' 4¾" #6—22' 5"	#1— 9,170 #2—10,200 #3— 9,170 #5—17,900 #6—18,900
9	Consumers' Power Co.	.....	..	Combustion Engineering Corp. Type "E"	9' 9" (Width of furnace)	9' 0"	4,300

NEW PLANTS AND ADDITIONS

STEAM GENERATING UNITS

	Company Owning the Plant	Number of Boilers in Plant			Type of Boilers and Manufacturer	Design Pressure Lb. per Sq. Inch Gauge	Operating Pressure Lb. per Sq. Inch Gauge
		Now	Covered by This Report	Future Total			
1	The Rochester Gas & Electric Corp.	3	3	4	Dry Drum Bigelow Hornsby	380	350 (Htg. season) 300 (Light loads)
2	The Rochester Gas & Electric Corp.	2	2	4	Dry Drum Bigelow Hornsby	380	350 (Htg. season) 300 (Light loads)
3	The Milwaukee Elec. Railway and Power Company	14	14	.....	Horizontal water tube Edgemoor Iron Works	#6 to #11—175 #15 —200 #1 to #5—210 #13 & #14/225	160
4	The Edison Electric Illuminating Co. of Boston	2	2	6 (in completed Station)	4 drum Stirling Babcock-Wilcox Co.	225	210
5	Winnipeg Heating Co.	5	5	None	Kidwell Canadian Vickers	155	125
6	New York Steam Corporation	5	1	.....	Ladd, six Drum vertical bent tube. Combustion Eng. Corporation	300	285
7	City of Winnipeg Hydro Elec. System	7	4—Pulverized Fuel 3 Electric	.....	Coal Erie City—2 Drum John Inglis, Toronto, Ont. Electric—General Electric Co.	250	220
8	The Detroit Edison Company	5	5	6	#1 W-27 Babcock Wilcox Co. #2 Z-27 Connelly Boiler Co. #3 W-27 Babcock Wilcox Co. #5 W-40 Babcock Wilcox Co. #6 W-40 Heine Boiler Co.	160	125
9	Consumers' Power Co.	3	1	4	Wickes Cross Drum Water Tube	160	125

NEW PLANTS AND ADDITIONS

STEAM GENERATING UNITS (Continued)

	Company Owning the Plant	Total Steam Temperature °F.	Capacity of Each Boiler Covered by this Report in Thousand Pounds per Hour	HEATING SURFACE IN SQUARE FEET		
				Boiler	Superheater	Economizer
1	The Rochester Gas & Electric Corp.	530	#1 & 2—150 each #3 120 "	9,590 each	2,420 each	Integral economizer 1,629 each. Low pres- sure economizer #1 & 2 only, 4,707 each.
2	The Rochester Gas & Electric Corp.	530	#1 & 2—100 each	9,590 each	2,420 each	Integral economizer, 1,629 each.
3	The Milwaukee Elec. Railway and Power Company	380	#1-5— 25 each #6-11—30 " #13-14—78 " #15—102 250	#1-11—5,000 each #13-14 and 15— —10,430 each	#1-5—594 each (only)	None
4	The Edison Electric Illuminating Co. of Boston	366		19,030	None	None
5	Winnipeg Heating Co.	388	#1, 2 and 3—40 each Unit Pulverizers #4 and 5—60 each Stokers	35,000	....	....
6	New York Steam Corporation	417	1,000 Max. 700 Guaranteed	32,260	None	19,656
7	City of Winnipeg Hydro Elec. System	550 Pulverized Fuel 397 Electric Boiler	110—Coal 21—Electric	11,000	1,620	....
8	The Detroit Edison Company	353	#1— 82.5 #2— 91.5 #3— 82.5 #5—161 #6—164 30	#1—13,000 #2—15,430 #3—13,000 #5—25,200 #6—25,650 4,833	None	None
9	Consumers' Power Co.	388				

NEW PLANTS AND ADDITIONS

STEAM GENERATING UNITS (Continued)

	Company Owning the Plant	HEATING SURFACE IN SQUARE FEET			How Many Sides of Furnace are Water Cooled	Manufacturer of Water Walls
		Air Heater	Water Cooled Furnace Walls	Total Heating Surface		
1	The Rochester Gas & Electric Corp.	None	#1 & 2—616 each #3 598 " Water screen 208 each boiler.	#1—19,170 #2—19,170 #3—14,445	3	Combustion Engineering Corporation
2	The Rochester Gas & Electric Corp.	None	None	#1—13,639 #2—13,639	.....	.....
3	The Milwaukee Elec. Railway and Power Company	#15 only 12,625	#15 only 1,000	#1-#5— 5,594 each #6-#11— 5,000 " #13-#14—10,430 " #15—24,055 "	Side and rear wall of #15 only	Combustion Engineering Corporation
4	The Edison Electric Illuminating Co. of Boston	16,920	1,943	37,893 per boiler	3	Fuller-Lehigh Company
5	Winnipeg Heating Co.	.....	.....	35,000	None	.....
6	New York Steam Corporation	61,440	8,250	121,606	4	Combustion Engineering Corporation
7	City of Winnipeg Hydro Elec. System	.....	Water screen 320	12,940	.....	Water screen by Combustion Engineering Corporation
8	The Detroit Edison Company	None	None	#1—13,000 #2—15,430 #3—13,000 #4—13,000 #5—25,200 #6—25,650 4,833	None	.....
9	Consumers' Power Co.	.....	.....	.....	None	.....

NEW PLANTS AND ADDITIONS

STEAM GENERATING UNITS (Continued)

DRAFT DATA

	Company Owning the Plant	Volume of Each Furnace in Cubic Ft.	FORCED DRAFT FANS			
			Number of Forced Draft Fans	Capacity of Each in C.F.M.	Pressure at Fan at Rated Capacity Inches of Water Gauge	Constant or Variable Speed
1	The Rochester Gas & Electric Corp.	10,000	.....	.....	.....	.....
2	The Rochester Gas & Electric Corp.	10,000	.....	.....	.....	.....
3	The Milwaukee Elec. Railway and Power Co.	#1-5 —1,600 ea. #6-11 — 730 " #13& #14— 770 " #15 —6,950 "	#1-5 —1 fan each #6-11 —6 fans and 2 booster fans #13& #14—2 fans each #15 —1 fan	#1-5 3 fans—2,800 2 " —3,000 Others not known	#1- 5 —5} #6-11 —2} #13& #14 —2}	Variable
4	The Edison Electric Illuminating Co. of Boston	11,900	1 per Boiler	96,000	17	Variable
5	Winnipeg Heating Co.	#1—3,400 #2—3,400 #3—2,500 #4—2,100 #5—2,100	2	40,000	3.5	Variable
6	New York Steam Corporation	32,000	2	125,000	12.5	Variable
7	City of Winnipeg Hydro Elec. System	7,200	None	.....	.....	.....
8	The Detroit Edison Company	#1— 4,370 #2— 4,700 #3— 4,770 #5— 6,590 #6—11,840	8	#1—39,000, #1&3—39,000 #3 & 5—134,000 #5 —134,000 #2 — 39,000 #2 & 4— 39,000 #4 & 6—134,000 #6 —134,000	7 All fans	Variable All fans
9	Consumers' Power Co.	1,000	1 per Boiler	15,000	4.5	Constant

NEW PLANTS AND ADDITIONS
STEAM GENERATING UNITS (Continued)
DRAFT DATA

	Company Owning the Plant	INDUCED DRAFT FANS				Constant or Variable Speeds
		Number of Induced Draft Fans	Capacity of Each in C.F.M.	Pressure Developed at Rated Capacity Inches of Water Gauge	Temperature of Gases at Fans °F.	
1	The Rochester Gas & Electric Corp.	1 per Boiler	#1— 73,000 #2— 73,000 #3—125,000	3.2 3.2 3.2	435 435 600	Variable
2	The Rochester Gas & Electric Corp.	None	.....	.....	.....	.....
3	The Milwaukee Elec. Railway and Power Co.	One on #15 only	51,000	5½	296	Constant
4	The Edison Electric Illuminating Co. of Boston	One per Boiler	175,000	17	155	Variable
5	Winnipeg Heating Co.	2 (not operated; installed before chimney was built)	.....	.....	.....	.....
6	New York Steam Corporation	2	250,000	16.5	395 at full output	Variable
7	City of Winnipeg Hydro Elec. System	2	89,500	3.5	600	Variable
8	The Detroit Edison Company	5	#1— 98,000 #2— 98,000 #3— 98,000 #5—212,000 #6—212,000	#1, 2 & 3—1½ #5 & 6 —3	#1, 2 & 3—700° F. at 200% rating #5—625° F. at 200% rating #6—525° F. at 200% rating	Variable All fans
9	Consumers' Power Co.	None

NEW PLANTS AND ADDITIONS

STEAM GENERATING UNITS (Continued)

DRAFT DATA

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	Company Owning the Plant	STACK				
		Type of Stack	Is Stack Lined?	Number Boilers per Stack	Inside Diameter at Top	Height of Top Above Ground
1	The Rochester Gas & Electric Corp.	Concrete	.....	3	9 ft.	254 ft.
2	The Rochester Gas & Electric Corp.	Concrete	.....	2	10 ft.	230 ft.
3	The Milwaukee Elec. Railway and Power Co.	One Steel One Concrete	Steel stack only	#1-11 on steel stack, #13, 14 & 15 on concrete stack	16 ft. 13 ft.	200 ft. 200 ft.
4	The Edison Electric Illuminating Co. of Boston	Brick	Yes	2	15 ft.	250 ft.
5	Winnipeg Heating Co.	Custodis	Yes	5	12' 0"	175' 0"
6	New York Steam Corporation	Steel	No	5 6—ultimate	22' 0"	383' 4½"
7	City of Winnipeg Hydro Elec. System	Reinforced Concrete	Partially, 66 feet	2	10 ft.	233 ft.
8	The Detroit Edison Company	Steel	Yes—Brick	2	10 ft.	175 ft.
9	Consumers' Power Co.	Steel	No	2	6 ft.	100 ft.

NEW PLANTS AND ADDITIONS
STEAM GENERATING UNITS (Continued)
DRAFT DATA

	Company Owning the Plant	DUST CATCHERS			BOILER FEED WATER EQUIPMENT	
		Type and Manufacturer	Number Installed	Located on Suction or Discharge of the Induced Draft Fans	BOILER FEED PUMPS	
					Number	Capacity of Each, Gals. per Min.
1	The Rochester Gas & Electric Corp.	None	.....	.....	3	500 500 300
2	The Rochester Gas & Electric Corp.	None	.....	.....	2	500 200
3	The Milwaukee Elec. Railway and Power Co.	None	.....	.....	5	1— 450 2— 1,000 2— 448
4	The Edison Electric Illuminating Co. of Boston	4 Pease-Anthony Gas Scrubbers, 2 of the rotating disc type and 2 of the spray type.	4—2 per Boiler	Suction	2	1,200
5	Winnipeg Heating Co.	Cyclone—B. F. Sturtevant Company.	1 on #1 and #2 Boilers.	Discharge	2	12x8½x10 Duplex steam driven outside center packed pumps.
6	New York Steam Corporation	Cottrell Research Corp. of U. S. A.	1 six section	Discharge	2	1,500
7	City of Winnipeg Hydro Elec. Sustem	.....	None	.....	4	2— 360 1— 720 1— 1,000
8	The Detroit Edison Company	None	.....	.....	5	U. S. gallons #1— 1,500 #2— 550 #3— 750 #4— 550 #5— 1,200
9	Consumers' Power Co.	None	.....	.....	3	2 at 60 1 at 74

NEW PLANTS AND ADDITIONS
 BOILER FEED WATER EQUIPMENT (Continued)
 BOILER FEED PUMPS (Continued)

	Company Owning the Plant	Operating Pressure Pounds per Sq. In. Gauge	BOILER FEED WATER REGULATORS		FEED WATER HEATER		
			Type and Manufacturer	Number per Boiler	Type and Manufacturer	Temperature of Water Leaving Heater °F.	Oxygen in Water Leaving Heater in in C.C. per Liter
1	The Rochester Gas & Electric Corp.	400 400 390	Thermostatic, Copes	1	Deaerating (closed) Cochrane	230	Zero to trace
2	The Rochester Gas & Electric Corp.	475 475	Thermostatic, Copes	1	Deaerating (closed) Cochrane	230	Zero to trace
3	The Milwaukee Elec. Railway and Power Co.	180	None	.....	One closed heater, Goubert; One open heater, Hoppes	220 (closed) 180 to 200 (open)	.03
4	The Edison Electric Illuminating Co. of Boston	265	Generator operating valve by siphon, Bailey Meter Co.	2	Deaerating Cochrane Corp.	215	Less than .03
5	Winnipeg Heating Co.	175	Swartwout	1	Hoppes	150-180	?
6	New York Steam Corporation	450	Copes—Pilot Operated. Northern Equipment Company	2	Open Cochrane Corp.	200	.5
7	City of Winnipeg Hydro Elec. System	271	Copes—Northern Equipment Company	1	Open Cochrane Corp.	200	.....
8	The Detroit Edison Company	175	Copes expansion tube type—Erie Pump and Equipment Company	1	Open. The Detroit Edison Company	200	.4
9	Consumers' Power Co.	200	None	.....	Hoppes—Open type	175	?

NEW PLANTS AND ADDITIONS

BOILER FEED WATER TREATMENT

	Company Owning the Plant	FEED WATER TREATMENT			
		Percent of Make-up	Source of Make-up	Method of Treating	Percent Blow-down
1	The Rochester Gas & Electric Corp.	60	City Water	Permutit System	2½
2	The Rochester Gas & Electric Corp.	50	City Water	Dearborn (internal)	2½
3	The Milwaukee Elec. Railway and Power Co.	100	City Water	18 parts flake caustic soda, 25 parts mono-sodium, varying with water.	8
4	The Edison Electric Illuminating Co. of Boston	85	City Water	Zeolite water softener and sulphate feed.	3½
5	Winnipeg Heating Co.	100	City Water	None	?
6	New York Steam Corporation	85	City Water	Hall System	4
7	City of Winnipeg Hydro Elec. System	Practically all	City Water	None	....
8	The Detroit Edison Company	100	City Water	Addition of soda ash	2½
9	Consumers' Power Co.	20	City Water	Zeolite	?

NEW PLANTS AND ADDITIONS

FEED WATER TREATMENT (Continued)

	Company Owning the Plant	FEED WATER TREATMENT (Continued)			Water Storage On Property in Gallons	Ultimate Water Storage in Hours at Full Load	How Many Sources of Water Supply For the Plant?
		Provision for Absorbing Heat of Blow-down	Continuous or Intermittent Blow-down	Any Internal Treatment of Boiler Water			
1	The Rochester Gas & Electric Corp.	None	Continuous	No	.....	2½	1
2	The Rochester Gas & Electric Corp.	None	Intermittent	Yes	.....	½	2
3	The Milwaukee Elec. Railway and Power Co.	None	Intermittent	No	None	None	3
4	The Edison Electric Illuminating Co. of Boston	Heat Exchanger	Continuous	Sulphates only	90,000	1½ to 2	2
5	Winnipeg Heating Co.	None	Intermittent	No	None	.....	1
6	New York Steam Corporation	Heat Exchanger	Continuous	Yes	None	None	2
7	City of Winnipeg Hydro Elec. System	.....	Intermittent	No	12,000 U. S. Gallons	.....	2
8	The Detroit Edison Company	None	Intermittent	Yes	74,400	1¼	Connection to two separate city mains
9	Consumers' Power Co.	None	Intermittent	No	1,700	¼	(1) Returns from system (2) City water

NEW PLANTS AND ADDITIONS

AUXILIARY DRIVE

	Company Owning the Plant	AUXILIARY DRIVE DATA			
		Steam or Electrically Driven Auxiliaries	Steam Pressure To Auxiliaries Pounds per Sq. Inch Gauge	Back Pressure On Auxiliary Turbines Pound Per Sq. Inch Gauge	Total Auxiliary Steam Load in Percent Maximum and Average Output of Boiler
1	The Rochester Gas & Electric Corp.	Steam and electric on feed pumps, electric only on other auxiliaries.	350	15	None used at maximum output except in emergency.
2	The Rochester Gas & Electric Corp.	Steam and electric on feed pumps, electric only on other auxiliaries.	350	12	None used at maximum output except in emergency.
3	The Milwaukee Elec. Railway and Power Co.	Both.	160	25	7.5 (average load)
4	The Edison Electric Illuminating Co. of Boston	Essential auxiliaries turbine driven. Nonessential auxiliaries, electric.	200	5 (Maximum)	15% of Maximum
5	Winnipeg Heating Co.	Steam	125	2	10 Maximum 20 Average
6	New York Steam Corporation	Steam—Boiler Feed Pumps. Motor driven boiler equipment.	265	5	13 Maximum 15 Average
7	City of Winnipeg Hydro Elec. System	Steam and Electric.	225	1	Negligible.
8	The Detroit Edison Company	Both steam and electric boiler feed and booster pumps—all other auxiliaries electrically driven.	125	12	10-12%
9	Consumers' Power Co.	Elec.—Fans and coal handling, steam—balance of auxiliaries.	125	0-20	11

NEW PLANTS AND ADDITIONS

AUXILIARY DRIVE (Continued)

	Company Owning the Plant	Capacity of Turbine Generator Installed	What Percent of Kw.Hr. Generated are Used for Auxiliary Drive	Generator Voltage	Voltage to Motors	Any Tie with Outside Electrical Service	What Auxiliaries are Automatically Controlled
1	The Rochester Gas & Electric Corp.	1—3,000 Kw. 1—5,000 Kw.	Varies with season depending on turbine loading. Steam auxiliaries are used when light station loads do not permit electric generation.	4,150	208	Yes	None
2	The Rochester Gas & Electric Corp.	1—3,000 Kw.	Ditto	4,150	440	Yes	None
3	The Milwaukee Elec. Railway and Power Co.	None	.....	.....	.....	Yes	Raymond Mills
4	The Edison Electric Illuminating Co. of Boston	None	.....	.....	440 A. C. 220 D. C.	Yes	#1 & 2 F. D. Fans I. D. Fans Pulverizer feeders Boiler feed pumps
5	Winnipeg Heating Co.	None	.....	None	.....	No	None
6	New York Steam Corporation	4,000 New 15,000 total for station	100	2,300	2,200	Breakdown service only	Fans Feed pumps, ash handling equipm't.
7	City of Winnipeg Hydro Elec. System	11,000 used only for standby for electric system.	.....	12,000	.....	Yes	None
8	The Detroit Edison Company	1,000 house turbine 1— 500 Kw. 1—1,000 Kw.	10—Approx.	6,000 265	220 265	Yes, with sub-station	None
9	Consumers' Power Co.	None	.....	.....	440	Yes	Feed Pumps and Vacuum Pumps

NEW PLANTS AND ADDITIONS

	Company Owning the Plant	ASH HANDLING EQUIPMENT		PIPING	
		Type	Manufacturer	Pressure for which Main Steam Piping was Designed Lb. per Sq. In. Gauge	Type of Joints in Main Steam and Boiler Feed Piping
1	The Rochester Gas & Electric Corp.	Steam Jet	Gritanner	400	Main Steam—Sargo Boiler Feed—Male and Female
2	The Rochester Gas & Electric Corp.	Hydro jet	Allen-Sherman Hoff Co.	400	Main Steam—Sargo Boiler Feed—Male and Female
3	The Milwaukee Elec. Railway and Power Co.	Scraper and bucket conveyors	Link Belt	185	Flanged
4	The Edison Electric Illuminating Co. of Boston	Sluice	Allen-Sherman Hoff Co.	250	Van Stone
5	Winnipeg Heating Co.	Truck	Ford	125	Flanged
6	New York Steam Corporation	Hydro jet	Allen-Sherman Hoff Co.	400	Van Stone
7	City of Winnipeg Hydro Elec. System	Steam het Vasco	Vacuum Ash Steam Co.	300	Crane lap flanges on steam, plain flanges on feed water piping.
8	The Detroit Edison Company	Hauled from boiler ash pit by truck. Hopper manufactured by The Detroit Edison Co.	.....	200	Van Stone
9	Consumers' Power Co.	Wheelbarrow and bucket elevator—Jeffrey Mfg. Co.	.....	150	Standard Flanged

NEW PLANTS AND ADDITIONS

	Company Owning the Plant	PIPING (Continued)			REMARKS
		Single or Double Boiler Feed Headers	Single or Double Station Steam Headers	What Means Provided for Taking Care of Expansion of Steam Piping in the Station?	
1	The Rochester Gas & Electric Corp.	Double	Single	Bends	12,000 #-hr. steam generating capacity per foot of furnace width
2	The Rochester Gas & Electric Corp.	Double	Single	Bends	
3	The Milwaukee Elec. Railway and Power Co.	Double	Single	Bends and expansion joints	
4	The Edison Electric Illuminating Co. of Boston	Double	Single (Future auxiliary header of small size)	200 lbs. pipe bends, 5 lbs. Copper expansion joints	
5	Winnipeg Heating Co.	Double	Single	Pipe bends	
6	New York Steam Corporation	Double	Double	Pipe bends	
7	City of Winnipeg Hydro Elec. System	Single Loop	Single Loop	Free	
8	The Detroit Edison Company	Double	Ring header with 2 separate manifolds and dividing valves	Expansion joints and bends	
9	Consumers' Power Co.	Double	Single	Expansion bends	