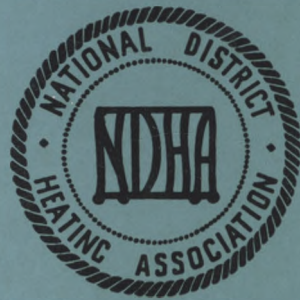


# DISTRICT HEATING

PUBLISHED QUARTERLY SINCE 1915

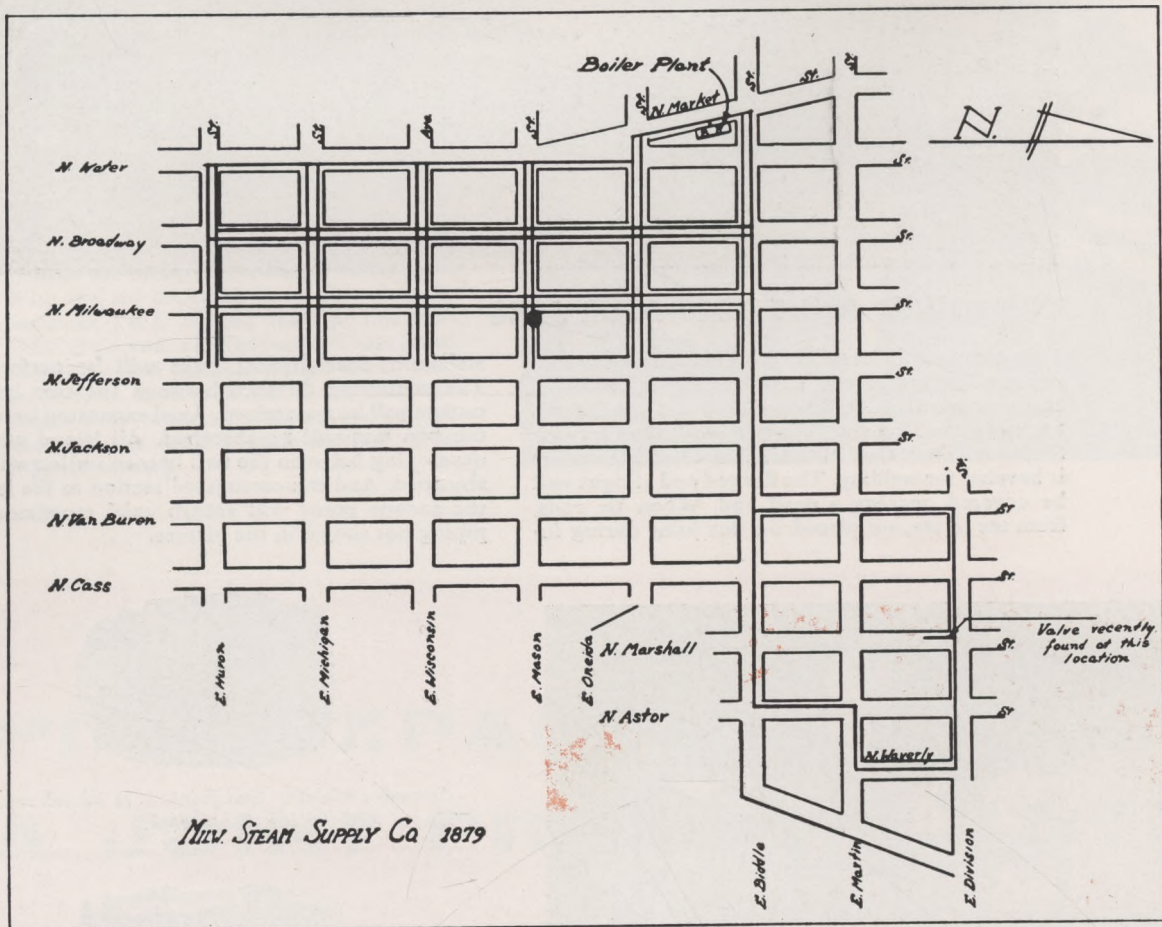


JULY, 1955 — VOL. XLI, No. 1



DENVER

AN OFFICIAL PUBLICATION OF THE NATIONAL DISTRICT HEATING ASSOCIATION



## The Granddaddy of Central Station Heating\*

Uncovering of Old Valve Recalls Pioneer Steam Distribution System

THE recent removal of a 4" gate valve from a buried manhole in the intersection of E. Juneau ave. and N. Marshall st., recalled the operations of Milwaukee's original district heating company which commenced business in 1879.

The old valve was uncovered during excavation for the new 16" heating main being installed by the heating division of the Company to serve the Astor hotel. It had been installed on the piping system of the pioneer Milwaukee Steam Supply Co., granddaddy of central station heating in Wisconsin and indeed the entire northwest.

Old files of the **Milwaukee Sentinel** give a rather complete account of the organization of the old company, its system and steam generating station. Headlined by "A Scheme to Heat the City by Steam

from a General Furnace," the **Sentinel** of March 26, 1879, reported:

"There is a big scheme afoot. And it is squarely on both feet—virtually an established fact. It is no more nor less than a project to heat the city by steam. The undertaking is a success in Baltimore, and the lesser metropolis of our sister state has taken a long step in proving the novel enterprise a success. The Detroit Free Press building for instance is not only heated by steam from the municipal retort, but its printing presses are driven by the same power.

"The particulars of this enterprise have been so quietly talked up, it has been only within a few days that it was generally understood that a stock company had actually been formed. But such is the fact.

"Such men as Mayor Black, Alexander Mitchell, W. P. McLaren, Robert Eliot, Messrs. Greene and Button, Ricker, Ray, Mix, Boyd, etc., who are not the ones to invest their money in chimera, have pledged capital stock to the necessary extent—\$75,000—and the next point will be to find out what financial support the move will have from the general public.

"The plan is to erect retorts in some central portion of the city, and run pipes

to the manufactories or other buildings who pay charges for the service used as is done from the gas works. The pipes are to be iron, encased in wood. As it would be impossible to lay the pipes under the water, from the danger of too great condensation of steam, it would be necessary to have a separate retort for each section of the city."

Subsequently the **Sentinel** said (March 28, 1879):

"Building and pipe laying in completion of the new steam system, pointedly noticed as about to be introduced in this city, is to commence by May 1. Arrangements will be completed by September 1 to accommodate such buildings in the central part of the city as the Newhall House and Mitchell Block."

(July 18, 1879) "The Steam Supply Company announces that they will place mains this season so as to heat buildings on the east side of East Water st., from Oneida to Huron; both sides of Broadway and Milwaukee sts., from Biddle to Huron; both sides of Oneida, from Market to Jefferson; both sides of Mason, Wisconsin, Michigan and Huron sts., from East Water

\* Reprinted by permission from "The Outlet," house organ of the Wisconsin Electric Power Company.

to Jefferson; and both sides of Biddle st., from Market to Jefferson.

"When steam supply is generally introduced, stores selling secondhand goods will be stocked with stoves and heaters of every kind. For then the lonesome bachelor will turn the vapor into a little coil to heat his shaving water, and the hopeful blue-eyed servant will cause the kettle to sing "Hail Columbia" or "Kiss Me Quick" by a mere turn of her wrist. With no wood to split, nor coal to house, and last but not least, with no stoves to put up, husbands will be the happiest of mortals. Speed the blue vapor!"

An interesting and complete description of the new method of heating was given in the issue of September 4, 1879, as follows:

"Although the introduction of the district system of steam heating in Milwaukee is classed among the most important of recent improvements, comparatively little is known of the magnitude of the work. A description of the enterprise and the methods of carrying it out will prove interesting not only to those by whom it will be patronized, but to the public generally, as a step in a cosmopolitan direction by Milwaukee, and in advance of nearly all cities in the country.

#### Shops on River St.

"The first place to be visited by a person wishing information on the subject is the shops of the Milwaukee Steam Supply Company on River st., where the pipes are prepared for laying by a half dozen begrimed workmen. The pipes, in a crude state, are placed in a lathe, in which they can be turned freely, when they are coated with asbestos paper, coarse brown porous paper and one of Manilla paper. Four wooden strips are then wound spirally around the pipes, and the whole securely bound with copper wire. The object of these strips is to leave a space between the iron pipe and the wooden log by which it is enclosed, thus providing for expansion and contraction by changes of temperature.

"The outside covering is white pine logs bored out 2" in inside diameter larger than the diameter of the iron pipe, and the thickness of the wooden shield is not less than 3" to 4", preventing radiation and condensation when the steam is transmitted long distances. Below the pipes is laid a tile drain 3" or 4" in diameter.

"To guard against strains from expansion and contraction caused by differences of temperature, expansion joints are provided which are connected with junction boxes, from which steam is taken by customers. It is a scientific fact that wrought iron will contract or expand  $4\frac{1}{2}$ " in 200'. One end of the main is screwed to one end of the junction box, and passes through a short distance into the interior box, upon the end of which pipe a sleeve about 6" long is screwed. The free end of the pipe slips loosely into this sleeve, leaving a small annular space through which the steam escapes into the box, and thence into the service pipes. The junction box is a heavy casting, bolted to the logs, and is intended to be immovable.

"From the street mains and junction boxes the steam passes into the service pipe, being taken up by an elbow called

a hood, which turns freely around the end of the service pipe, and is designed when turned downwards to dip into and remove any water that the service box may possibly contain. The pipes are proportioned to the consumption they are intended to supply.

"After a service pipe enters a building, carrying steam at from 25 to 50 lbs. pressure, it passes through an apparatus called a regulator, consisting of two diaphragms of rubber packing acted upon by weighted levers, and moving small slide valves by means of rods connected with the diaphragms. The first of these valves reduces the pressure from the mains and service pipes from 10 to 2 lbs., as desired. From the regulators the steam, at a low and uniform pressure, passes to the meter, which is in connection with and operated by the regulator. The meter resembles a Yankee clock, and when wound runs for 55 days. From the regulator the steam intended for heating purposes passes into the radiators, any of the automatic forms of which may be used.

"The next place to visit is the Boiler House on Market st. between Oneida and Martin. The building is of solid brick, 60 x 119' and wholly fireproof. When the battery is completed there will be 24 boilers, 5' in diameter and 16' long, capable of heating between 30,000,000 and 40,000,000 feet of space. Only six will be placed this season, the foundations of which are already built, and the work of putting in the engines will begin today.

*Oscar (Ted) Branenburg of the heating division with a "museum piece", a valve used on Milwaukee's original steam heating system, 1879.*



"Between 6,000 and 7,000' of pipe are now laid, and 15,000' will be laid by the 20th inst. about which time the steam will be turned on. The pipes laid this season will supply only the main portion of the business houses of the east side down as far as Huron st.; also the Seventh ward up Biddle to Astor sts., up Van Buren to Division, thence to Waverly pl. and back to Astor. The company has arranged to heat many business blocks, including the post office, the Newhall House, National Exchange Bank and T. A. Chapman's store, besides a number of private residences.

"The district system of steam heating was first introduced in Lockport, N. Y. in 1877, and since then in Detroit, Springfield, Mass, Soldiers Home, Dayton, O. and now in this city, Chicago stock yards, and Dubuque, Ia. E. P. Holly, of Lockport, N. Y., whose father is the inventor of the system, and who is superintendent of the company, has been here for several days engaged in looking over the work as far as progressed, and pronounces Milwaukee's the model system."

With that account, the *Sentinel* apparently rested its case, and examination of subsequent files of the newspaper reveal no further information on the steam heating venture.

But many years later, in 1939, Mrs. J. M. Pereles, then a customer of our present heating system, told Henry Warhanek, superintendent, that the Milwaukee Steam Supply Company abruptly stopped operations on one of the coldest days in

February, probably in 1881 or 1882, making it necessary for the customers to vacate their homes until new boiler plants could be installed. What happened in the hotels, stores and offices on the system was not reported.

Henry concludes that the old company was ahead of its time. It operated at a pressure of 80 lbs. which was reduced in the customer's buildings to five lbs. Trouble was experienced in maintaining proper pressures on the customer's premises and with leaks on expansion joints and shut-off valves.

Failure of the pioneer heating company was a deterrent to the progress of district heating in Milwaukee, and it was a number of years until another attempt was made to introduce such service.

However, 10 heating companies were in operation at various times during the period of 1890 to 1900.

One of the largest of these was the Pabst Light, Heat and Power Company, organized in 1891 to serve properties owned by the Pabst Brewing Company on the east side of the Milwaukee river. Its plant

was located in the building on Broadway now occupied by the Company's legal offices and the Badger Auto Service Company garage.

The Pabst Company was acquired in 1897 by the Milwaukee Light, Heat and Traction Company (later merged into TMER&L Company).

The facilities of the Pabst plant and the steam distribution system were operated by our Company until 1906. Thereafter its customers were served from the Oneida street (now East Wells street) plant.

The public Service Building power plant in the basement of the Company's new headquarters building began serving west side heating customers when it began operations in 1906. The east and west side systems were connected in 1915 by means of a tunnel under the Milwaukee river north of Wells st.

Other heating systems integrated into the Company system were those of the Plankinton Electric Light and Power Company, enfranchised in 1907, and its business taken over by lease and agreement

in 1915; the Wells Power Company, enfranchised in 1907 as the Wells Building Company, and taken over by TMER&L Company in 1921; and the Commonwealth Power Company, incorporated in 1908 and acquired in 1917.

The plant of the Plankinton Company was located at about the center of the block bounded by W. Wisconsin, W. Michigan, and Second sts., and Plankinton ave., and its stack was standing until a few years ago.

The Wells Power Company had plants in the Wells and Stephenson buildings on the east side. The latter plant still provides steam to the east side system.

The Commonwealth Company heating plants were situated in the sub-basements of the Enterprise and Alhambra buildings on the west side of Milwaukee.

Central station heating is provided by our Company in Waukesha, and such service also was once furnished in Kenosha and West Bend.

### NDHA's 46th Annual Meeting at the Edgewater Beach, Chicago

(Continued from Page 16)

warranting further study. John L. McKinley in his paper on the use of equipment at other than design temperatures said that if there is cooperation, it is almost always possible to get satisfactory results. In the final paper, Stanley L. Furber of Minneapolis-Honeywell described changes made in the Buhl building in Detroit which lowered steam consumption about 20 per cent.

Three papers also were presented by the Steam Station Engineering Committee. In the first of these by Russell C. Hine, the author described their favorable experiences in Baltimore with an oil-fired boiler put into service in 1950. This unit cost only \$2.70 per lb of gross sendout compared with \$8.85 for a conventional stoker-fired coal boiler.

In the second paper William M. Dull of The Detroit Edison Company described the installation of a stainless steel feedwater heater in the Beacon Heating Plant and compared its operation and maintenance with those of other heaters in the plant.

In the third and final paper, N. W. Young, Staff Engineer of the Babcock & Wilcox Company, offered various suggestions to help minimize the cost of steam generating equipment in district heating installations. Such economies permit the sale of steam at a lower price.

Additional descriptions of the papers of other committees will be given in the October issue of the magazine.

### CUDAHY, WIS.

The appointment of Fred K. Krell as assistant sales manager in the fittings division has been announced by the Ladish Company, manufacturer of welded fittings.

### LONDON, ENGLAND

The Industrial Heating Engineer in its February, March, April and May issues includes four articles on the **Measurement of Heat Supply** for group heating, these being a condensed translation of articles by A. Fournal and P. Lacroix published originally in the Cahiers Du Centre Scientifique et Technique Du Batiment in Paris.

### PHILADELPHIA, PA.

George D. Keller, General Sales Manager of the Penn Instrument Division of Burgess-Manning Company of this city, has announced that the process and power work of his company will be handled by William F. Braun. Philadelphia area sales and service will be handled by Messrs. Bulger, Vink and Forman.

### MONTREAL, QUE.

NDHA member Lorne Wiggs, president of the consulting firm of Wiggs, Walford, Frost & Lindsay with offices in Montreal and Toronto has announced the opening of a new office in Ottawa.