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OF THE

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CONVENTION

OF

The National District Heating Association

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D. L. GASKILL, *Secretary.*

H. R. WETHERELL, *Technical Secretary.*

to go ahead with the development of plants feeding relatively small areas and perhaps widely distributed from each other, a sort of a decentralized system of steam and power generation.

In the plant feeding the industrial district you have the same advantage, so far as the generation of power in that plant is concerned, that you have in the downtown district, and you can furthermore give your industrial customers in that district a greater protection to their service through the connection of this heating plant on to their electric load, so that in case of a disturbance on the main electrical system their service will continue from the steam plant without interruption.

(Applause.)

President Shultz: I will now ask Mr. Butler to read the short paper which Mr. Margolis has sent us on "Central Heating in Germany." Mr. Butler.

Mr. Butler: I will first read Mr. Margolis' letter to Mr. Shultz.

"Mr. Earle Shultz, President,
"National District Heating Association,
"Convention of the N. D. H. A.,
"Niagara Falls, N. Y.
"Dear Sir:

"When sailing home from the U. S. A., I had the intention of writing an account of district heating in Germany for you as soon as possible. But, on arriving, I found the conditions worse than I could imagine. I had such a lot to do and so many troubles that I did not find the time to gather my English knowledge in a logical article. So please excuse the delay and do not think I have forgotten my American friends; on the contrary, I often think of the interesting plants and of the great kindness I found everywhere in your wonderful country.

"I send you herewith a short account of district heating in Germany, with pictures and catalogues that may be of interest to you. Another article, explaining why the combined plants are preferred in Germany, will follow.

"I am sorry I cannot join you at the Convention, but my thoughts are with you, and I send you my best wishes for great success in your work.

"With my kindest regards to you and all the friends,
I am
"Very sincerely yours,
("Signed) A. Margolis."

The report which accompanied his letter to President Shultz reads as follows:

DISTRICT HEATING IN GERMANY

Central station heating service was first adopted in Germany for hospitals and asylums about fifty years ago. For these installations not the economy but the convenience, the cleanliness, and the elimination of smoke was considered. Later on the same system has been developed for different institutional buildings and great factories. There are hundreds of such central station heating plants in this country.

A remarkable step in the development of district heating was the installation at Dresden, where in 1900 a station was built to supply eleven building with steam and twenty buildings with electricity. Steam of 120 pounds pressure was supplied at a distance of 3,400 feet. In 1911 a hot-water distribution system for domestic purposes was added. The Dresden plant is not considered as a business enterprise; it has a very expensive underground tunnel construction and was built to avoid the separate boiler plants with their inconvenience and to eliminate the fire risk in the principal state buildings and museums containing valuable works of art.

The first district heating company as a business enterprise was founded at Hamburg in 1921. This company, the Fernheizwerk Hamburg, G. m. b. H., was organized by the Hamburg Electric Company and the known heating contractors, Rud. Otto Meyer, owned by Dr. Ing. Schiele. A low-pressure distribution line has been laid from the old electric plant Poststrasse (Fig. 1). The Hamburg Electric Company planned at first to remove the old steam engines, installed in 1895, and to replace them by a.c.-d.c. transformers. Of the six engines installed, three units have been removed already. But controlling the planning from the standpoint of heat utilization, which was at the time of the great coal shortage, it was found that the combined electric and heating service was more economical. The triple expansion engines were then rebuilt for seven pounds back pressure and the underground lines installed.

In 1924, twenty-four steam and hot-water plants, with a total demand

of 70,000 pounds of steam per hour, were served. As the boiler house could not be increased, another boiler plant of the Station Carolinenstrasse was rented, and both stations connected by a main steam line of 6,900 feet in length.

The interconnection of the stations has had the following advantages:

1. A new district could be provided with heating service.
2. The heating district of the Poststrasse could be enlarged by taking steam from the new plant.
3. The cost of producing steam was reduced as the plant Carolinenstrasse had a railway connection and the Poststrasse did not. The live steam which was taken from the Poststrasse plant is now taken from the Carolinenstrasse at a lower cost.

Here is a remarkable example of where the transporting of heat by means of a steam line is cheaper than the transporting of coal. This fact is of very great importance for the further development of district heating or town heating, as we call it. It is similar to the development of electric service, though, on a smaller scale. Beginning with a small station in the center of the town, gradually, with the greater demand for electricity, other stations were established lying farther away. When the steam production of the Poststrasse was not sufficient, the supply was increased from the Station Carolinenstrasse, and when these plants can no longer suffice, it is intended to connect them with the electric plant Bille, lying about $2\frac{1}{2}$ miles away from the Station Poststrasse. No doubt the time will come, and it is not so far away, that a whole town will be served with heat from several stations located outside of the town, and all the furnaces and boilers, with their chimneys lying inside of the town, will disappear.

The following data may be of some interest:

The boiler plant of the Poststrasse consists of nine units of 2,700 square feet each, with a boiler pressure of 165 pounds. The boiler plant of the Carolinenstrasse consists of sixteen units of 2,700 square feet each, at a pressure of 165 pounds.

The engine capacity of the Poststrasse consists of three units of 400 KW each (one in the meantime removed).

In the Carolinenstrasse a turbo-generator of 200 KW for 22 pounds back pressure is being installed.

The underground pipe lines have a total length of seven miles. The largest diameter is 20 inches.

The conduits are chiefly of concrete, the manholes of brick.

The pipes are covered with cork.

All the condensation water is returned, the loss being about ten per cent.

The condensation meters of Siemens are used. The construction is similar to that of the Detroit Meter, but its drum has only three compartments. The Siemens Meter has bearings of a special meta' so that no oiling is necessary.

The total load is now 150,000 pounds/hr., and with the lines now under construction will probably be increased to 220,000 pounds/hr.

The Hamburg District Heating Plant attracted considerable attention and similar plants have been erected at Kiel, Barmen, and Braunschweig.

New plants are in construction in Leipzig and Charlottenburg/Berlin.

All these plants have low-pressure steam lines. There is only one plant in Neuköln/Berlin using hot-water distribution.

All the plants besides Neuköln are producing electricity as a by-product.

According to general opinion, the future development of the district heating business in Germany will grow rapidly and, in the opinion of the writer, it will be in the direction of combined plants. The reasons for which should be explained in another article.

(Signed) MARGOLIS.

President Shultz: We will next show the moving-picture film of the recent developments in heating here in this country, which was prepared last summer; it, perhaps, isn't quite up to date, but I think you will find it rather interesting. It shows the developments in Detroit, Cleveland, Pittsburgh, and New York City. If you will connect up the other projector, we will have those pictures. (Reel shown.)

When we were planning this session I felt certain that it would be of great interest and value to all of us, but I think it has far exceeded the plans and thoughts that we had about it. I don't recall ever having gone through a session of any convention that has been more instructive and enlightening than the session that we have just gone through.

If there are any questions or discussion of this general subject, I will be very glad to have them at the present time.

Mr. Herr: It may be of general interest to say a few words about the new plant that we are about to erect in Philadelphia. This plant will