

## MUNICIPAL DEPARTMENT

### DISPOSAL OF REFUSE AT HAMBURG, GERMANY.

Mr. W. M. Watson, of Toronto, sends us the following condensed report of the system employed at Hamburg, Germany, for the utilization of the garbage of the city. The particulars are obtained from a report recently issued by Mr. Herr F. Andreas Meyer, City Engineer.

The city of Hamburg, Germany, with its population of 300,000 inhabitants, has an incinerator, comprising 36 furnaces, to destroy the offal, garbage, street and marine refuse, and everything useless and infectious that may set up putrefaction. The destructor has been in operation since 1895. Herr Meyer informs us that the garbage and refuse of Hamburg is composed of market, dock and domestic garbage, sweepings from paved streets and slaughter houses, spoiled fish, etc., but that, on account of the small amount of cinders and coal ashes collected in Hamburg, in comparison to what is collected in British towns, and of the custom in Hamburg of covering the floors of the poorer dwellings, kitchens, yards and other flagged walks with sand, which when dirty is swept up and deposited in the garbage bin and comes to the incinerators, the combined refuse is hard to cremate, because the sand proves a detriment, and there is not the cinder fuel usual in the British refuse to create the heat to destroy wet rubbish.

The 36 furnaces, having 27½ square feet of grate surface, are erected in two rows of 18 each, placed back to back, with the large collecting and combustion chamber between them. The furnaces were built by the Horsfall Syndicate of Leeds, England, who guaranteed that each furnace should consume 11,000 pounds of wet refuse or garbage each day, and the fumes, if any, discharged from the chimney should be odorless and totally free from unhealthy vapors, dust, etc. Six furnaces were first erected, and tested in 1894. They were found to be fully up to the guarantee, and the order was then given for the balance of 30 more, making the full complement of 36, which were finished in

1895 and have been working steadily ever since.

The garbage is collected by wagons that hold five cubic yards, and on arrival at the works are run on to an electric elevator and hoisted up to the tipping platform, then shovelled by hand on to the drying hearth, which is built with a steep incline at the rear of each furnace grate, where all the moisture is dried out, and driven by the blower through a trumpet pipe and along the patented iron box fixed on each side of the fire, delivered at a proper pressure into the ash-pipe, and then upwards through the body of the fire, which generates it into heating gas and completely destroys the fumes. The smoke and fire gases from the fire are brought to the front over the cleaning door, and pass through the crown arch to a combustion chamber of the same size as the fire-place; from this chamber it passes on to the general collecting chamber, and then to the steam boilers, and gives heat sufficient to create steam to propel all the machinery about the place, including the dynamos for 76 lights, clinker crushers, hoists, etc., and it is said there is still an excess of heat from the burnt garbage sufficient to generate 100 horse power of steam. The forced draught is created by centrifugal blowers, and steam can be used when necessary, according to the amount of moisture that is to be extracted from the material treated. The chimney draught is ½" and the forced draught 1¼" water column.

The furnaces employ 18 men for each shift 8 hours, or 54 men in all. One man charges the drying hearth of six furnaces once every 90 minutes, and one man keeps each set of three furnaces clean. Arrangements are provided so that any six of the 36 furnaces can be stopped and cooled off for repairs. No Sunday work is allowed. All the fires

are banked up at midnight on Saturday and started at midnight on Sunday, and to get the brickwork of the combustion chambers to a fierce white heat again, or to the temperature that they were when all was closed down on Saturday midnight, about 1,300 lbs. of small coal is used.

The works cover 3½ acres of ground in the centre of the town, together with the disinfecting building, close to the wharf and easy of access from all the main roads and waterways. They are perfectly free from any nuisance, dust or hot gases. The residum is screened and sold by the load, and, besides, 220,000 pounds of scrap metal was collected from the rubbish in a year, which sold for about \$200. The dust from the flues is found to be valuable in the manufacturing of artificial stone ornaments.

Lately the sweepings of paved streets have all been sold for manure, for which there is a good demand and price, and owing to the wet atmosphere of Hamburg, the sweepings are often very sloppy, and when burned had to be mixed with dry material to make it suitable to handle and rest on the drying hearths. The income from the sales goes a long way towards paying the expenses of management.

This kind of incinerator, or destructor as it is called in England is very applicable to this country, as it would turn any wet refuses to profitable account, by raising steam that might be used for manufacturing, for electric lighting, pumping or heating. A set of three furnaces will give heat sufficient, without the assistance of coal or other fuel, for one boiler, and when erected all complete, with boiler and first-class brickwork, iron work, and handy appliances for easy working the furnaces, the cost will be about \$14,000, not including the cost of chimney or the roads leading to the furnaces

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