

ures:—Population of town, 11,000; number of houses, 2,000; arc lamps for streets, 150; plant to accommodate 2,000 houses. They estimated the capital outlay including 10% for contingencies at \$129,884 for the electric lighting plant, and \$67,175 for the refuse and power plants, giving a total of \$197,058. It is extremely probable that the actual amount finally expended will fall considerably short of this figure.

The accompanying illustrations show the exterior view of the combined plant and the front view of the destructor proper with stoking and ash pit doors and trap doors for clinker. The buildings are situated in a hollow and great ingenuity was shown by the engineers in taking advantage of the lay of the land in order to utilize the force of gravity throughout the process of garbage destruction. The carts haul the refuse to the tipping platform far above the level of the grates into which it is dropped from the hoppers. The clinker is removed by wagons from the lower level. The refuse hopper which discharges into openings on top of the destructor, as seen in figure 2, is made of steel with lifting doors at its base close to the feed holes in the destructor. In the rear of the destructors are doors to enable the feeders to push the refuse in to the hottest portion of the fire without keeping the front doors unnecessarily open. The waste gasses from the burning refuse after firing the boiler pass through a series of staggered cast iron pipes about which air drawn from the room is kept circulating; after being heated by passing about these tubes the incoming air is carried through brick ducts to steam-jet blowers under the grates of the incinerator where the heated air (of a temperature of between 300 and 400 degrees Fahr.) is forced through the grate bars by the blowers.

The second function of the plant, that of supplying electricity to the town, is cleverly worked out in conjunction with the incinerating. In addition to the gas-fired boiler there are two others fired by hand with coal, this being necessary because of the insufficient supply of refuse. The steam from all these boilers feeds a common main which passes from the boiler house to the lighting station across a fifteen foot roadway. The generating units consist of three vertical cross-compound condensing high speed engines made by the Robb Engineering Company, of Amherst, Nova Scotia, directly coupled to 2,300-volt, 60-cycle three-phase alternators of Crocker-Wheeler make. Two of these units have a full load capacity of 200 kilowatts with an overload rating of fifty per cent. the third being a 50 kilowatt unit of similar characteristics. Provision has been made for the installation in the same building of a fourth unit which will double the capacity of the plant, the present equipment of boilers being sufficient to handle the additional unit.

The station is now furnishing electric light to private citizens of Westmount. When it is in full running order the plant will furnish all the light required for both municipal and private use in the town. The price will be lowered as the number of customers increases and it is expected that the rate per kilowatt hour will eventually be eight cents.

The following is the report made by Messrs. Ross & Holgate on the test referred to earlier in this article:

REPORT OF TEST OF MUNICIPAL REFUSE DESTRUCTOR, WEST MOUNT, P. Q., MAY 3RD, 1906.

W. L. Lee, Esq., Chairman Light Committee, Westmount:

DEAR SIR:—Since April 12th, 1906, the refuse destructor built by Messrs. Meldrum Bros., in connection with your municipal

lighting plant, has been successfully destroying all refuse brought to it, in quantities averaging about 30 loads per day, the average weight of a load being about 1,500 pounds. This has usually been burned in 10 to 12 hours, giving an average burning capacity to the destructor of about 4,500 lbs. per hour, or a little over two tons. During several days this amount has been exceeded, and we have therefore no hesitation in saying that the maker's guarantees of 50 tons per 24 hours can be attained with proper firing. In order to officially test the plant, however, on May 3rd, a staff of our engineers went to Westmount, and conducted a special test run as follows:—

OBJECT OF TEST:—The test was conducted to try the burning and evaporative powers of the Meldrum Bros., three-grate refuse destructor when fired with unscreened mixed refuse, and connected to a Babcock & Wilcox boiler of 2,197 square feet of heating surface, and also to test the maker's guarantees regarding completeness of combustion, quality of residual clinker, temperatures in various parts of the destructor, etc., etc.

APPARATUS USED:—The following apparatus and instruments were made use of:

1. Meldrum destructor with regenerator, steam jet blowers, etc.
2. B. & W. water tube boiler, of 2,197 square feet heating surface, and with superheater and the necessary pipes to engine, atmosphere, etc.
3. Orsat apparatus for analyzing flue gasses.
4. U-tube gages for ash-pit pressures and chimney pull.
5. Dial thermometers for gas temperatures entering and leaving regenerator.
6. Stem thermometers for hot air, cold air, and feed water temperatures, etc.
7. Aneroid barometer for atmospheric pressure.
8. Public standard scales for weighing refuse, clinker, tins, etc., and also for calibrating the barrels used for measuring the feed water.
9. Knowles 6 x 4 duplex pump for feeding boiler, equipped with Williams Gage Co.'s automatic feed regulator.
10. Watkins heat recorders for combustion chamber temperatures.

DURATION OF TEST:—The test proper commenced at 10 a. m. and ended at 6.32 p. m., or continued for 8 hours 32 minutes.

CONDITIONS OF OPERATIONS:—Weather: Wednesday, May 2nd, was raining all day and all night. Thursday, May 3rd was raining in morning until 11.30, when rain stopped and wind got up. Afternoon was warm and sunny.

APPARATUS:—The destructor gases fired the B. & W. boiler and the steam was used to drive a 130 h. p. Robb Engineering Co.'s simple non-condensing engine belted to a temporary 75 k. w. monocyclic generator carrying the day load of the town, which is a purely residential district, and therefore has a light day load. As this was light the whole power was not used, and the steam was blowing off to the atmosphere from the boiler almost continually.

MEN:—The following staff comprised the personnel of the test. Four men operating the destructor, one man attending to feed water, one man reading pressures and temperatures, one man checking weights and measures and taking gas analysis, one superintendent of test.

METHOD OF MAKING TRIAL:—The corporation (municipal) carts dumped the garbage into the large storage bin which had been cleaned out over night, and gave the checker the weight ticket as the cart was emptied. All large tins and unburnable refuse were picked out and put to one side and weighed separately afterwards. Fires were started at 7.55 a. m. with a light supply of old wood and a little coal, on clean grates, and kept in until 9.50, when the first weighed loads were dumped into the hopper. Firing with garbage commenced at 10 o'clock with the destructor warmed up, two men raking the refuse from the bin into the charging holes, and two men at the same time levelling the charge from the rear. Each fire was charged in turn, its steam blast being shut off during this process. After burning for about two hours (during which period fresh garbage was added to each fire every 20 minutes), the mass was thoroughly clinkered and it was then withdrawn from the front and dropped through the floor into the clinker pit below, whence it was removed to be weighed. Tins, etc., were also deposited in this bin for weighing. Fires were each clinkered three times. When the fires were well burned down and ready to clinker for the third time the test was ended, the burnt clinker being left on the grate bars over night to keep the destructor warm for the next