

MUNICIPAL DEPARTMENT

GARBAGE DISPOSAL AND POWER PRODUCTION.

The great municipal problem of garbage disposal, for the solution of which the crematory has been adopted in numerous instances, has seldom, if ever, completely yielded to this treatment. The crematory itself, in its regular operation, usually constitutes a great public nuisance over a considerable area of which its site forms the center. Even the garbage reduction works at Barren Island, apparently so completely isolated from the cities of New York and vicinity has ever continued to be a serious offense to residents of localities at considerable distance from it. The smokeless combustion of bituminous coal is, comparatively speaking, less desirable and necessary to public health and comfort than the odorless combustion of garbage when this method of its disposal is attempted.

The difficulties attendant upon the satisfactory operation of the crematory have recently been definitely brought to notice as a result of an official investigation of the conditions existing at the garbage disposal plant at Trenton, N. J. Continued complaint forced an expert inspection, the result of which shows that the trouble lies almost entirely with the improper construction of the furnaces and appurtenances and the imperfect operation of the plant for complete combustion of the garbage, and very little with the methods of collection and hauling of the refuse to the crematory and its storage there for the short time sometimes occurring before it can be charged into the furnaces.

Besides the offensive odors from unburned portions in the ashes and in the gases emitted from the chimney, dust and some burning particles escaping from the chimney created nuisance in the neighborhood of the crematory. It was found, in addition to certain defects in furnace construction, that the supposition that any fireman accustomed to burning coal could be expected to properly attend garbage fires, is quite erroneous. On the contrary, the latter work requires special training for which previous experience with coal is of surprisingly small value. That this is reasonably true may be seen from the consideration of the nature of the case. Garbage, as found at Trenton, consists of 84 per cent. kitchen refuse (animal and vegetable matter) thoroughly saturated with water, 12 per cent. paper, 3 per cent. rags, clothing, carpets, etc., and 1 per cent. boxes, barrels and similar wooden refuse; 81 per cent. of the whole being water. The difference between the firing of this heterogeneous conglomeration of trash and that of coal may easily be imagined.

The action of the garbage furnace is, of course, to free the mixture from water by passing it first through a drying chamber heated by the combustion of the previously

dried material. The presence of moisture in large quantities and the varying character of the composition burned, together with other unavoidable features, render complete combustion very difficult.

The dried garbage at times contains so large a percentage of noncombustible matters as to require the assistance of coal or other fuel in maintaining the fires, as well as in starting them. The report in the case of the Trenton plant shows, among other things, that during a period of six days, 13.7 tons of coal were used, an average of 2.3 tons per day of 14 hours, the garbage burned per ton of coal being 13.8 tons. The rate of burning was 45 pounds of garbage per square foot of grate per hour. The ashes and clinkers, including those from the coal, amounted to about 9 per cent. of the original weight of the coal and garbage. The temperature of the escaping gases was estimated as varying between 600 and 1,000 degrees F. As already stated, the garbage was 81 per cent. water, from which it appears that 25.5 tons of water were evaporated per day. This evaporation, on the basis of 10 lbs. of water per pound of coal, would require the combustion of 2.5 tons of coal. The amount actually used being 2.3 tons, it would seem that the daily fuel value of the garbage as burned in the Trenton plant may be considered equivalent to 0.2 tons of coal.

Various writers and authorities, whose opinion and suggestions cannot but be regarded seriously, have called attention to the availability of the waste from large cities for the production of steam power. So far as we are aware, however, no plants of this kind have been attempted nor actually projected. That such an industrial development of usefulness from garbage disposal may be successful, it is evident from what has already been said, that the operation of the plant must be rendered and maintained unobjectionable, and that the conditions of fuel value as existing in the case here cited must be improved upon before material results in steam generation for power purposes may be expected.—Steam Engineering.

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