

BALTIMORE'S SYSTEM OF GARBAGE DISPOSAL.

BY DAY ALLEN WILLEY.

The question of disposing of the garbage which accumulates in large cities has been the subject of much study and, as is well known, a number of systems have been placed in operation, including not only sewage farms but crematories, also reduction plants. The latter plan appears to be especially favored, since by it most of the by-products of value can be secured from the refuse material. A plant has been recently constructed at Baltimore which in the opinion of sanitary engineers is the most complete of its kind which has yet been designed for this purpose. It has been in operation a sufficient length of time to demonstrate its capacity to dispose of all of the garbage collected in the city at present, while it is adequate to serve the needs of a larger community.

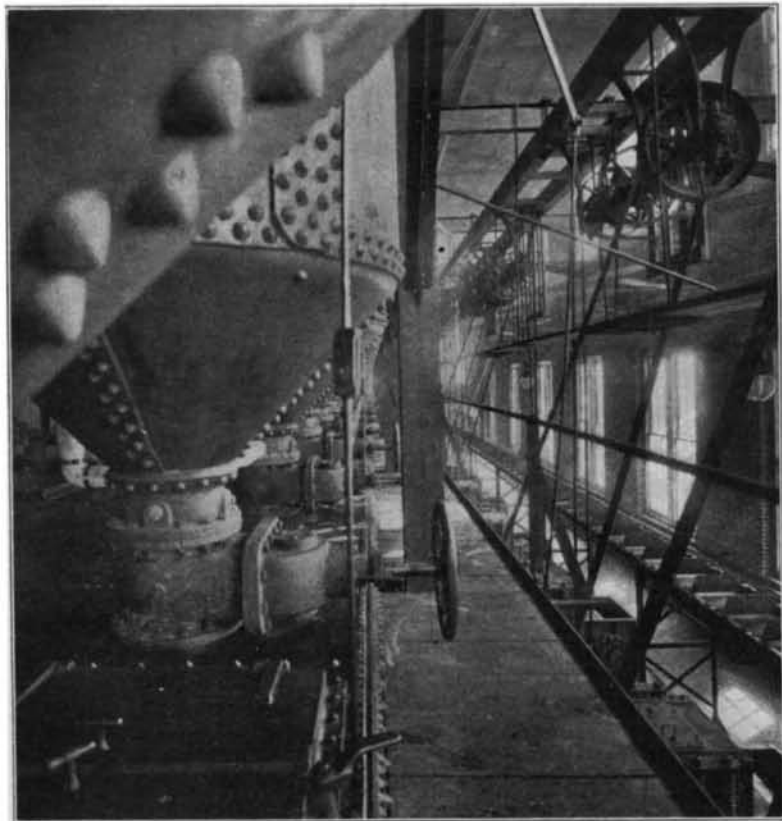
ers. Of these there are twenty-eight, of a capacity of ten tons each, or 560 tons for the entire plant in twenty-four hours. This process is naturally one of the most important of the series. The garbage which is taken in at the tops of the digesters as received from the endless conveyor is treated to a steam pressure of 100 pounds, the steam being forced through pipes entering the bottom of the digesters. A temperature of 300 degrees is maintained until the sterilization is completed, when the digesters are freed from their contents by opening valves in the bottom, allowing the material to pass by force of gravity into reservoirs which connect with the several presses.

The next step in the process is the automatic separation of the solid from the liquids. This is done by a comparatively new device and consists of a powerful roller press, a late invention of the patentee. The

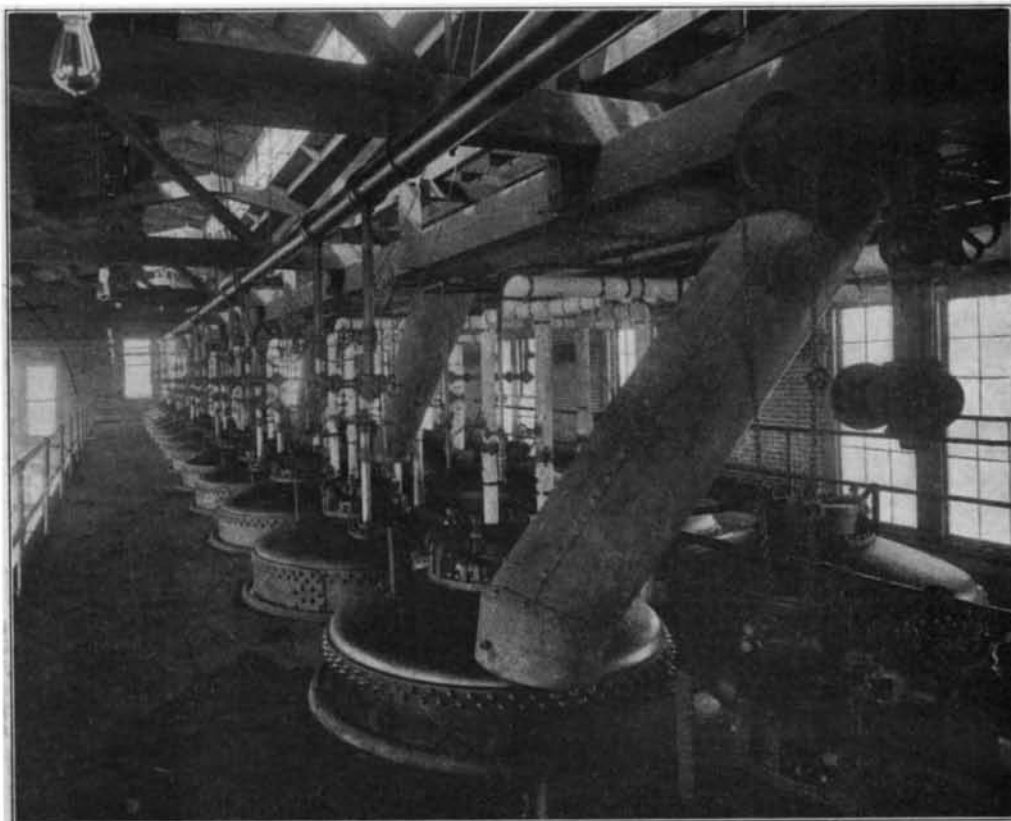
catch basins. The basins are so arranged that the grease gradually accumulates at the top, where it is secured by pumping. Of this residue about 3 per cent represents grease which, with that obtained directly from the presses, is sold to be manufactured into soap and other compounds.

The solid matter when dry assumes a granulated form and is almost odorless. It might be added that a feature of the plant is its sanitary condition, and comparatively little odor is noted in its interior.

The mechanical outfit comprises a battery of six horizontal return tubular boilers of 200 horse power capacity each, constructed for a working pressure of 125 pounds steam. The boilers are so arranged that each can be used or its use discontinued without in any sense affecting the others. They are supplied by duplex high-duty pumps with modern heating device. The



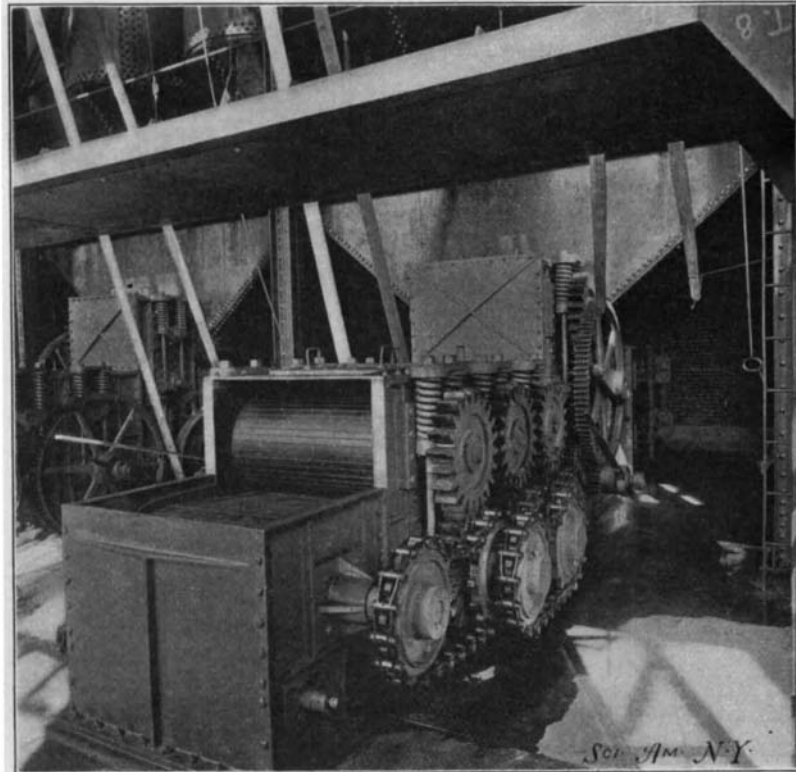
The Valve Gallery in the Digester Department.



Upper Portion of the Digester Department, Showing the Tops of the Digesters and Feed Pipes.



Automatic Conveyor for Unloading Garbage.



Details of the Press.

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While similar in some respects to the installations in Philadelphia and Boston, the Baltimore plant embraces a number of new features. The system employed is widely known among engineers.

A notable feature is the comparatively small amount of space required. The site of the works is located on the harbor in the southern part of the city, so that the material can be brought to the place both by vehicles and scows especially constructed for the purpose. Tank wagons are used which regularly collect the garbage throughout the city. As fast as filled they are hauled to the plant and their contents dumped upon specially constructed scows, which are in turn emptied automatically by an endless conveyor operated by steam power. The first step in the reduction process proper is the thorough sterilization by steam of all the material in hermetically sealed chambers commonly called digest-

material passes through a series of massive rolls, by which all liquids are pressed out automatically and the refractory substances reduced to such form that they can readily be handled as a base for commercial fertilizers. Similar machines are in use in plants previously built, but these later machines are much larger, each having a capacity of ten tons per hour, and requiring practically no attention from the operatives.

Tests which have been made at the works show that of the material passing through the presses about one-fifth is secured in the form of tankage containing 37 per cent moisture. The balance consists of a little over 1 per cent of nitrogen, about 1.57 per cent of phosphoric acid, 0.11 per cent of potash, and 7.91 per cent of grease, while about 3½ per cent is an equivalent of bone phosphate of lime. The liquid residue passes from the presses through conduits into a series of 14

presses are driven by 50-horsepower horizontal engines, and the various systems of conveyors by vertical engines, all of modern high-duty type. The conveyors are of steel construction throughout and are practically indestructible, and all parts subject to wear throughout the plant are readily interchangeable.

The company has begun the construction of a fertilizer plant in connection with its garbage works. This will probably be completed within the next year, and as fast as the "raw material" is turned out in the reduction process it will be transferred automatically to the other works. It is expected to treat from 15,000 to 20,000 tons of the tankage from the presses yearly by the acidulation method and thus form a fertilizer basis. The company which installed and owns the reduction machinery, and collects the garbage from the city, is building the fertilizer works as well.