SEWER CLEANING IN ATLANTIC CITY

Windlasses and Cables, With Metal Scoop, Used for Worst Cases, Poles for Light Deposits—Grease the Cause of Most of the Stoppages—Amounts of Grease and Junk Removed.

By FREDERICK T. PARKER*

The city of Atlantic City is situated upon Absecon island, a strip of sand nine miles long by approximately one mile in width, five miles from the main shore line of the South Jersey coast.

The fixed population is given in 1915 as 56,000, to which may be added from 30,000 to 400,000 pleasure seeking visitors who are attracted in yearly-increasing numbers by the fame of the resort. The population, therefore, may be figured at approximately 100,000 for the fall and winter season and at about half a million for the summer vacation period. The world-famed Easter crowd, the almost as famous Palm Sunday gathering, with the records for attendance on Washington's and Lincoln's birthdays not far behind, all running from 350,000 upwards, furnish an illustration of what must be done in the way of city equipment to cope with these unusual conditions.

The sewerage system has been designed with the very rapid growth of the resort and its increasing patronage in mind, and will be, when completed, adequate for the requirements of the city for many years to come.

Sewer construction in Atlantic City is a particularly difficult and expensive proposition. The highest point in the town being but 15.8 feet above mean low tide, very nearly all of the construction work is prosecuted in shifting sand and water. Sheet piling, trench pumping, pile foundation work, etc., enter into the constructive operation for every foot of pipe laid.

The city's sewage flows by gravity to a main sump well, where, after screening, it is pumped to a point of disposal two miles outside the city limits.

The topography of the locality necessitates flat sewer grades, which make the stoppage problem one for continual attention. In spite of gross misuse of plumbing fixtures by the majority of the fixed population, as well as the holiday visitors, and the fact that very few grease traps are used, although the numerous hotels discharge large quantities of grease from their kitchens, very favorable decreases in stoppages have been recorded for the past few years, due to increased efficiency in sewer scooping operations.

In 1903 there were 533 main stoppages recorded; during the past several years the figures show decreases as follows: 1913, 257; 1914, 230; and in 1915, 203.

Practically all sewer stoppages in Atlantic City are traceable to grease, though rags are responsible for a large percentage of the trouble. Sand in large quantities is removed from the mains during the bathing sea-

son, while miscellaneous articles, from false teeth to stockings, are removed in goodly quantities daily.

The accompanying pictures are illustrative of the extent to which grease and junk accumulate in the sewers of Atlantic City and the appliances used in the removal thereof. An idea of the extent to which scooping operations have to be carried on may be gathered from the record of an operation recently concluded wherein 17 barrels of solid grease blocks, measuring 18 to 30 inches in length by 6 to 10 inches in thickness, were removed from 200 feet of 12-inch sewer pipe. The operation required 5 laborers' time for 11 10-hour days.

A word as to the methods employed in the scooping operations.

A scooping crew comprises five men, who relieve each other at regular intervals, so that two men are at work in each of two manholes continually and one man, while relieved from manhole duty, watches traffic and assists in the loading of refuse containers, which are removed by teams as fast as practicable.

Scooping outfits (contained in portable tool boxes, hand drawn) consist of interlocking poles, various sized metal scoops, picks, shovels, hatchets, chisels, lanterns, tar, cement, etc., for poling, and two windlasses with from 400 to 600 feet of 3/4-inch wire cable and various metal grease cutters, etc., for use with the same.

Scooping is effected by either a poling process in lesser operations, or the use of cable and windlass in more stubborn ones.

In poling, a scoop of heavy metal, similar to a grocer's sugar scoop and of a size adapted to the pipe line to be cleared, is attached to the end of an interlocking pole 3 feet long. The scoop is pushed into the main, against the flow of the sewage, and other poles attached as the distance scooped increases. When the scoop is full it is drawn back, its contents transferred to a bucket, which is lifted to the refuse container at the top of the manhole. Two men are required for this operation, which is necessarily very slow.

Where poling fails, the cable and windlass have to be employed, and this process is a greater time consumer than the hand poling operation. A light cord or rope is passed through the section to be cleared from one manhole to another by means of a float or, in bad cases, interlocking poles must be used to carry the rope through the main. By this there is drawn through the section a heavy rope to which is attached a wire cable. When the cable has been passed through the pipe line, a grease cutter (a spiral steel contrivance, cylindrical in shape,
enlargement of the experimental screening plant which has been in operation here for the past four years. The New Jersey State Board of Health gave its approval to the system of disposal proposed by the company’s engineers for the sewage of Atlantic City only after a period

CABLE AND WINDLASS METHOD OF CLEANING SEWERS.  
Cable Held to Bottom of Sewer by Bracing 2 x 4 Upright in Man, With Snatch Block Attached.  
Trailer Attached to Scoop to Prevent Loss of Scooping.

of most careful and exhaustive experimentation under the supervision of the state inspectors.

The photograph of the experimental station indicates what can be done in the way of beautification of plants of this nature. The station is located in the centre of Atlantic City’s most exclusive residential district. Francis E. Daniels, in Municipal Journal for July 16, 1914, says, regarding the operation of this station: “In one of our plants the sewage is passed successively through screens of graded sizes from coarse bar screens to woven

In order to protect the pumps, which are relied upon for the removal of the city’s sewage, from such accumulations of rags, hair, etc., bar screens have been installed at the points of inflow in the main sump well. These screens are arranged in pairs and operated by an electric hoist. The screenings removed from these devices during the summer season average about 1,000 gallons in 24 hours, and through the fall and winter season 300 gallons daily.

Further screening of the city’s sewage is being provided for and a plant of 25,000,000 gallons capacity per 24 hours, which is two and a half times the average daily flow as recorded throughout the summer season of 1915, will be in operation shortly. This screening plant is an

with sharpened edges, that just fits the inside of the pipes) is attached and, by means of windlass, forced back and forth through the main, scraping the grease from the top and sides of the pipes.

Grease adheres so tenaciously to sewer pipes that the scooping operation is a time consumer and, of course, a very expensive one. The scooping costs for the Atlantic City system run well up into the thousands annually.

In addition to grease and quantities of rags and sand, scooping operations bring to light many articles that are diverted from ash heaps through carelessness, ignorance or possibly design.

The accompanying illustration is an actual photograph of a collection of junk removed from 150 feet of an 8-inch sewer, in addition to six barrels of grease, three barrels of sand, numerous rags, etc. A list follows:

One soup ladle, 5 table spoons, 1 tea spoon, 1 mustard ladle, 1 knife, a harmonica, pistol, atomizer bulb, toilet flush chain and ball, clothes pins, bones, a bed caster, hotel key and tag, pencils, pen holders, combs, broken bottles, candy tongs, hair pins, safety pins, tin boxes, a 2-foot rule, cocktail strainer, briar pipe, clam and oyster shells, ashes, coal, broken china, pumice stone, bathing caps, stockings, underwear, dish cloths, floor cloths, towels, etc.

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WINDLASS FOR "SCOOPING" SEWER, AND GREASE REMOVED FROM 6-INCH PIPE.

OBJECTS REMOVED FROM ONE SECTION OF EIGHT-INCH SEWER 150 FEET LONG.
wire cloth of 40 meshes to an inch. These screens are kept clean by an attendant, who is in constant daily attendance, and the screenings are removed in air-tight receptacles and carted away. The accompanying illustration shows the appearance of the plant. The screens are reached through trap doors. The chloride of lime is mixed and regulated in the rear room. The dosing is controlled by means of a variable-head orifice, which is raised or lowered in a constant-level box, so that the dose of chemicals is delivered into the last screen compartment proportional to the flow of sewage passing. "There is no odor or nuisance about this plant and everything is especially neat and tidy."

This experimental treatment station serves a population of approximately 4,000 and the maximum daily flow of sewage passing through the screens is estimated at 775,000 gallons. The screening removals average 8 gallons in each 24 hours and are carted away in air-tight containers.

The plan and section shown hereewith give the arrangement of the screens. The sewage first passes through a 1½-inch screen, then a ¾-inch and a ½-inch, all inclined bar screens; after this it passes through three vertical mesh screens, of ⅜-inch, ⅝-inch and 1/40-inch respectively, the last being in a separate compartment, where the chloride of lime is added.

After screening, the sewage is treated with a hypochlorite of lime solution which is administered to the sewage automatically in the proportion of 55 parts per million. The disinfection apparatus was designed by the American Water Softener Company, of Philadelphia.

The labor in connection with the operation of the treatment station requires about two hours' work each day for an attendant, but inasmuch as the treatment station is located in the centre of Atlantic City's most select residential district, it has been found advisable to keep a man at this station throughout each day, including Sundays, and the operation of the plant, upon this basis, costs approximately $20 per week. If it were not essential that a man be kept at the plant throughout each day, the cost of operation, including removal of sludge by motor boat, would be approximately $10 per week.

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GARBAGE DISPOSAL IN DAYTON*

Plant Being Constructed by City for Reduction of Garbage—Estimate of Cost of Plant, of Operating Expenses, and of Revenue.

By J. E. Barlow.

In Dayton, Ohio, prior to 1914, the garbage, which was required by ordinance to be placed in separate receptacles, had been collected by the city and delivered to a privately owned reduction plant, which disposed of it without compensation under a ten year contract which expired December 23, 1913. The reduction company claimed that it did not get all of the garbage, the best being collected by private scavengers and that the city allowed the householders to put in too much water and rubbish, and the company sued the city and obtained judgment for $30,500. Dayton's experience in this matter gives substantial testimony to the desirability of concentrating the authority and responsibility for the collection, disposal, and enforcement of the ordinances requiring proper separation of the garbage—all of which leads to municipal ownership.

Just before the expiration of the above mentioned contract, the city, after having received and rejected bids several times, again received bids for a contract covering both collection and disposal of the garbage to take effect December 23, 1913, but awarded no contract. When the operation of the city under the new charter took effect in January, 1914, the time for the beginning of the contract had lapsed and furthermore a legal question was raised as to the power of the city to let a contract for a service extending over a period in excess of one year without all the money for the full term of the contract being in the fund. This resulted in the rejection of all the bids.

The city then employed the firm of Hering & Gregory to make an investigation and report on the whole subject of collection and disposal of the city's wastes, including ashes, rubbish, garbage and manure. A comprehensive report was made in March, 1914, recommend...