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Main Drainage and Its Relation to River and Harbor Front Improvements

Resumé of Methods Adopted in Many of the World's Leading Cities, with More Detailed Notes Regarding Design of the Essex Border Interceptor—Extracts from Paper Read This Week at Buffalo Convention of the American Society of Municipal Improvements

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IMPROVEMENTS to the water fronts of harbors and rivers, whether they be made for the purpose of commerce, industrial development or the establishment of parkways and open areas, serve to bring their waters to the attention of increasing numbers of people.

Unsanitary and objectionable conditions thereby coming to public notice, ultimately result in the creation of public sentiment demanding their correction.

One of the most objectionable nuisances encountered on water fronts is due to the discharge of raw sewage at or near the margin, and on the surface or at shallow depths.

The most commonly adopted means of correcting this condition is by the interception of the sewers and drains before their points of discharge, and the delivery of their contents to treatment works or to deep outlets where dispersion in large volumes of water is possible.

Main Drainage Improves Water Front

While we find many examples of river and harbor front improvements which have no problems of main drainage, the construction of a main drainage system in cities or towns, with a large harbor or river front, or both, invariably results in the improvement of the water front.

In cities or towns having an extended water front and no adequate sewerage or sewage disposal system, the sewage is usually discharged directly into the river or harbor, causing nuisances, hampering the development of the harbor, both commercially and aesthetically. Waters become polluted, built-up districts adjoining water front depreciate in value until they are abandoned or converted into slums, undeveloped lands remain so, and sanitary conditions of the whole community become dangerous. Sometimes the only source of water supply of a city becomes endangered by the discharge of sewage into it, as was the case in Chicago before the main drainage system was built.

Under these conditions it seems that sewage treatment and disposal are the first things to be considered.

But in order to collect the sewage at one or more centrally located points for treatment or some other method of disposal, a comprehensive system of main drainage is required to take the sewage to disposal or treatment points.

In this paper it is proposed to describe briefly some of the notable projects for river and harbor improvement,

both at home and abroad, which involved questions of main drainage, and to describe the methods adopted and proposed for eliminating the nuisances caused by the discharge of raw sewage, and to discuss the methods involving the use of intercepting sewers.

London, England

As might be expected, the general introduction of house drainage into the sewers, after the year 1847, caused decided injury to the River Thames, and the public press began to agitate for a remedy. At one time the stench from the polluted Thames in hot weather rendered the committee rooms in the Houses of Parliament in London uninhabitable.

By the removal of the sewage to treatment works and outfall lower down the river, these nuisances have been abolished, and London is now one of the healthiest and best-drained cities in the world.

Anticipating that it may be necessary to produce an effluent of greater purity than is possible by chemical precipitation, an area of about 750 acres has been obtained in the vicinity of Barking and Crossness, where improved methods of sewage disposal can be employed.

Paris, France

Paris (France) affords a good example of a city of the first class which protects its water highway by a comprehensive plan of main drainage. Except at periods of storm no sewage is allowed to enter the River Seine within the city limits.

The main drainage works are designed to focus at Clichy-on-the-Seine, a considerable distance beyond the city limits. Most of the sewage flows to this point by gravity through three large collectors. Intercepting sewers run parallel to the river banks within the city limits and are tributary to the main sewers which lead to the Clichy station.

The sewage of Paris, except that discharged into the Seine at and below Clichy, is utilized upon farm land.

Glasgow, Scotland

John D. Watson, in his report to the Metropolitan Sewage Commission of New York, says:—

“Many years ago the Clyde became so foul that even poor trippers declined to board pleasure steamers nearer to the Broomielaw than Greenock, several miles down the river. Since that time large sums of money have been spent on sewage disposal works, but the bad repu-