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EXPERIMENTS IN DISINFECTING SEWERS.

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WHEN the secretary of the American Public Health Association requested me, some weeks ago, to prepare a paper for this meeting, I responded that I would contribute an account of some experiments in disinfecting sewers.

Last year, it happened that rather strong reports in the newspapers of the rapid spread of cholera in Europe created public alarm, and the Common Council of the city of Detroit was suddenly aroused from its customary lethargy in regard to sanitary matters. The result was that a special appropriation of \$2500 was made from the contingent fund, to be spent by the Board of Public Works, under the direction of the health officer, to clean up the city. Considering the facts that no appropriation for years had been made to clean alleys; that no provision had ever been made for removal of garbage; that the sewer-system is among the worst, and that the area of the city was then over thirteen square miles—since increased to about twenty square miles—it is quite obvious that we experienced no difficulty in finding ways to spend the sum placed at our disposal. As the good citizens of Detroit, actuated by the common dread of pestilence, and always contriving to keep their city looking tidy, even under circumstances of negligence by the municipal legislature, set themselves to cleaning the alleys, each one the little section adjoining his own premises, and to removing all filth and garbage from their back yards; as the Health Department had been for some time busy making house-to-house visitations and ordering the removal of all accumulations in vaults and the drainage of lots and basements befouled with stagnant water; as the Board of Public Works vigorously bestirred itself in cleaning streets, our special work, in pursuance of the extraordinary appropria-

tion, seemed to be narrowed down to some care for the filthy and dangerous public sewers.

Detroit has no regular sewer system. The city is traversed by more than a score of great conduits, from four to eight feet in diameter, from two to seven miles in length. Most of them empty into the river submerged; consequently the dead water sets back in them from 1000 to 5000 feet. At their lower ends they are ordinarily choked with sediment, which is sometimes partly washed out in great storms. The submerged mouths are pretty effectually tapped, making these huge conduits receptacles for vast volumes of sewer gas. A rapid increase of water in the big sewer, during a summer shower, has sometimes caused such internal pressure of the confined air as to throw off covers from manholes in the streets. The effect on traps in the drains of houses can be easily imagined. The lateral sewers are constructed of common porous brick, thrown together by cheap workmen, and are all twenty inches in diameter, whether designed to drain five acres or fifty acres. Sewer empties into sewer, frequently at right angles, sometimes at the top, sometimes at the bottom. Now and then a large sewer is connected with a smaller one. Here and there depressions allow the sewage to become ponded and undergo putrefactive decomposition. In places the constructors have evidently expected water to run up-hill, in obedience to the wishes of a favored contractor. Recently more than twenty large saw-logs were extracted from a single sewer, fifty or sixty rods back from the river. More than 10,000 vaults are connected with the sewers, for the most part by means of eight-inch clay or cement pipe, laid without tight joints or traps. No wonder Detroit has annually more than 1000 cases of diph-