

theria. Doctors there used to tell the people that they had the best sewer system in the world, and that their city was the healthiest in the United States.

Notwithstanding the fact that two medical men descended into one of the great sewers, remained there, to use their own language, "twenty-four consecutive minutes," and not only came out alive, but announced to an expectant public that the air therein was "chemically pure," I determined to disinfect the 200 miles of sewers, and see what would come of it.

The work of disinfection was begun with copperas. There are in the streets and alleys of the city of Detroit about 5000 receiving basins communicating with the sewers. Into each of these were thrown a dozen pounds of copperas. To each school-house, police station, fire-engine house, and to every other public building a barrel of copperas was sent, at the city's expense. We used 75,000 pounds of copperas, purchased by the carload, at \$13 a ton. At the same time, I made arrangements whereby citizens could purchase, of a wholesale dealer, copperas for one cent a pound. Proprietors of retail drug stores who had been in the habit of charging ten cents a pound for it, denounced me in bitter terms for interfering with their trade. I threatened to expose their 1200 per cent profit on one of the necessities of cleanly life, when they quietly subsided. As nearly as I could calculate, the citizens purchased and used about 200,000 pounds during the season. The direct and indirect effect on the sewers, from the use of nearly 140 tons of copperas, was to disinfect the sewage for several successive weeks. The citizens found so much comfort from the disinfection of their foul-smelling drains that, with many of them, the use of copperas has become habitual. Some families in Detroit consider a bag of copperas as much a household necessity as a bag of flour. It is very true that copperas, or any other disinfectant, is not a perfect substitute for good plumbing and proper drainage, but it does something toward remedying a prevalent unsanitary evil.

To destroy the poison in the confined foul air of sewers; also to kill the fungoid growths on their inner walls, a gaseous disinfectant is necessary. I therefore determined to fumigate the sewers with burning sulphur. Conservative citizens

were sure it could not be done. They said: "No practical man would think of trying it. How could a brimstone fire be kindled and kept going down a sewer fifteen or twenty feet under the ground? And what good would it do, any way, if you made a fire in such a place? The fire would be smothered for the want of air, and the damp would put it out....."

Nevertheless, as an orthodox sanitarian I determined to try the experiment and let the heathen rage. Three tons of roll brimstone were purchased, at a total expense of \$150. Fifty galvanized iron pails, called steamboat pails, were purchased, at 75 cents each. A sufficient quantity of light chain, and five dozens spikes with hooks in the place of heads, were also purchased. Holes three quarters of an inch in diameter were punched in the iron pails, about two-thirds of the way up from the bottom, two inches apart all the way around.

Procuring from the Board of Public Works the services of two men experienced as to the location and construction of the sewers, loading up a wagon with a barrel of sulphur, a nest of pails perforated as aforesaid, a quantity of chain, a pair of nippers, a hammer, pick, shovel, crowbar, shavings, bundles of short wood fagots, and a barrel of charcoal, I started out amid the jeers of a disbelieving crowd of city officials.

With shovel, pick, and crowbar the cover of a manhole was lifted, when we reached the place of our destination. A spike, with a hook on the end of it, was driven into the wall of the brick well, a foot or two below the top; the chain was fastened to the bail of an iron pail, and the same let down into the sewer, so as to swing just clear of the sewage running in the bottom. The chain was then hooked on the spike already driven. The nippers served to cut off the chain above the hook. The pail was then drawn up, leaving the adjusted chain attached to its fastenings. Into the pail were put, first, a handful of lighted shavings, then on the burning shavings some fagots of wood, and, lastly on the igniting wood a small scoopful of charcoal. Over the pail was placed a sheet-iron cover, in the centre of which was inserted a single length of conical stove pipe, eight inches in diameter at the bottom and four at the top. The air rushed through the holes punched in the