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PROCESS

OF

THOROUGH SANITATION

FOR

Cities, Towns and Dwellings.

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Process of Thorough Sanitation.

The most momentous, and the most pressing question before the public to-day is :—

WHAT SHALL WE DO WITH SEWAGE.

Every day it grows in importance, and the ill-effects upon the health of every community from lack of attention to it, are but urgent demands for its solution.

Scientists have long urged that the first step towards the prevention of disease was in the proper attention to this question. And the frequency and fatality of fevers, diphtheria and other diseases directly attributable to imperfect drainage and sewer gas, have brought its attention home to the people at large, and they ask for deliverance from the engendered pestilence.

And now municipalities, thoroughly alive to needed sanitary reform, are spending immense sums of money to improve their drainage systems, hoping to escape the scourge of this filth neglect. **But they will not, because they are beginning at the wrong end!** For when human excrement is taken from cesspools or sewers, it is then putrid filth; the more it is handled the more the filth-germs are sown broadcast to poison the air with disease and death.

EVERY intelligent person realizes the stern necessity of removing human excreta and garbage from not only densely, but also sparsely populous districts, with the greatest rapidity, as all organic matter, from which life has departed, cannot remain in the vicinity of animal life without proving detrimental to the health of the latter.

For the former purpose the larger cities depend, in a great measure, on drain pipes and sewers, while the smaller rely solely on pits and cesspools.

If we mix human excrement or dead organic matter with any inorganic substance, we inaugurate decomposition. But deposit this same dead organic matter beyond the reach of anything to influence it, and we have putrefaction.

The drain pipes and sewers of our cities contain no substance that will appropriate organic matter, hence true decomposition in a drain pipe or sewer is an impossibility, and unhealthy putrefaction becomes the rule.

In our towns where fecal matter is deposited in pits to slug and sodden, putrefaction again becomes the rule.

So that in both cases the result is the same, *i. e.*, the refuse matter becomes a putrescent mass, which exhales pestilential gases to poison the atmosphere we breathe, and which breeds germs to poison the water we drink; as it has been demonstrated, time and time again, and is in fact of daily occurrence, that the germs of typhoid fever, diphtheria, cholera and other diseases, percolate through the soil, either from the cesspool or drain-pipe of houses where these diseases have existed, and thus gain an entrance to the water supply.

Many methods have been proposed, from time to time, to remedy this evil, and carry organic refuse to its proper and inevitable destiny, which is its burial just below the surface of the soil, where the inert organic matter will become decomposed into its original elements, to be taken therefrom by and to form again into organic matter, which in time will again become a part of the living animal. Thus will it decompose according to

nature's laws—a rational and necessary condition of the continued existence of animal and vegetable life.

One of the most prominent methods is irrigation by sewage, but it is, as a rule, impracticable on account of the soil becoming speedily choked up by coating the land in a manner that renders it impervious to the air, and which constitutes, by its free exposure and consequent putrefaction, a grave danger to public health.

To carry this feculent matter, including kitchen offal, out to sea, it would have to be precipitated in covered reservoirs, transferred from the precipitating tanks to special settling tanks, and from thence to the vessel. The objections to this system are, great expense, waste of valuable manure, nuisance on the coast, and delay in transit from stress of weather and other causes.

Machines at various times have been introduced for drying sewage and garbage by the application of heat; but as they contain in their normal condition 90 per cent. of moisture, the cost of fuel has prohibited the use of such apparatus, and this system is found impracticable, besides being a nuisance. As note the following: A case of some public interest was recently tried in Liverpool (says the Journal American Medical Association). The plaintiff was owner of some property, adjacent to which the corporation of Blackburn had erected a destructor for burning the refuse of the town, and against the use of which he sought (and obtained) an injunction, alleging that the process was a nuisance to him and his tenants, and injurious to his property. Besides, it must be remembered, that the burning of garbage does not improve sanitation in the very least. If the garbage is allowed to lie at or around dwellings to putrify, *what does it signify if the putrid stuff is burned.* Is it not a clear case of beginning at the wrong end.

Filters have been constructed of screened town ashes, carefully underdrained, and to further aid in the dessication of the glutinous mass, more ashes have been mixed with the sludge. During the winter, however, evaporation was feeble, and it was found that after exposure, between September and March, the sludge still

contained 77.5 per cent. of moisture, and was very offensive. In hot, dry weather, although the sludge dried more quickly, there was much more risk of creating a nuisance, unless the material was ploughed into the ground in its fresh condition, a method which was inapplicable in many cases. In towns of only moderate size, large areas were required for the exposure of the material, and this gave rise to a nuisance after a few days' exposure, unless the works were remote from dwellings.

What then can be done with offal in cesspools and sewers? *Nothing that is practical!* For, in the case of drainage, the problem grows apace with population, and is never satisfactory. In the case of burning, the cost of fuel is prohibitive. In the case of filters, it is a nuisance.

And all because it is handled at the wrong end. Putrid filth is useless for all purposes. Every method devised to handle it is too enormously expensive, besides being impracticable, and an open nuisance, and will only breed disease and death!

What then is the practical solution of this perplexing question? **Begin at the right end, by preventing putrifaction of all offal, and have every house scavenged at least once a week!** which is the system explained in the following pages, whereby cesspools are done away with, and drains and sewers will run with nothing but clear, pure water.

Process of thorough sanitation, and for the manufacture of an organic and chemical fertilizer from the refuse of cities and towns, including kitchen garbage and human excrement (liquid and solid), directly they are produced.

The process is based upon the fact that the dejecta of typhoid fever, and cholera patients (and in fact all excrements), do not become dangerous to others until putrefaction has set in.

Putrefaction is a great cause of ill-health. It is the putrefaction of organic refuse mixed with water in the sewers and cesspools that causes the long list of diseases which are ascribed to the inhalation of "sewer air."

A great scientific error is being committed by mixing excremental matter with water by means of the water-closet and sewer, as putrefaction is encouraged and nitrifaction delayed.

The great object to be aimed at, therefore, is some fixed principle of checking the putrefactive changes in fæculent matter, an end attained by appliances and methods of this process, whereby nothing but a clear, inodorous and inorganic water is allowed to pass into the sewer or gutter, and from thence into the river, thus preventing the former from putrefactive matter, and, consequently, the latter from sewage pollution. So that while retaining the benefits and comforts of the water-closet, it at the same time secures the two chief necessities of life—pure air to breathe and pure water to drink.

Treatment.

The first two most important objects in the treatment and utilization of human excrement is its deodorization and division into two portions—the liquid and the solid—which is accomplished automatically, in the sanitary appliance, directly it is produced.

The third is the fixing and concentration of both the saline and organic matters contained in the urine.

And the fourth is the prevention of putrefaction by decomposing the refuse with inorganic substances. The treatment consists in adding, automatically, to the excrement a compound of chemicals and inorganic material possessing the property of absorbing the ammonia, sulphurated hydrogen and other offensive gases, extracting the organic and saline substances, and deodorizing and preventing the putrefaction of the refuse as a whole, claiming the method to be the most practical, effective and economical that has ever been devised.

Process.

The system is one of filtration and precipitation. As soon as the excrement is deposited in the "receiver," set apart for that purpose, it is deodorized, and the separation of the solid and liquid portions takes place, the latter filtering from the depositing receiver into a second filtering receiver, wherein a further purification is effected, and from thence into a final precipitating department, where it is again purified. The "urinal slops" that accumulate in the different rooms of a dwelling, during the night and day, are gathered and poured into the urinal receiver, set apart for that purpose, containing a compound of filtrating and chemical material which also filters through into the same chamber in which the liquids, separated from the solids, is filtering, and from which they enter the precipitating "receiver," where all that is left of the organic substances in the liquid is carried to the bottom. The receiving departments of the "wash-slops" carries the material through into the bottom of the "receiver" without coming into contact with the other departments, or their contents, and which is intended for use in mills and dye works to filter and precipitate the poisonous liquids produced in such places.

Apparatus.

These appliances can be used in lieu of the cesspool and water closet, can be placed in any locality, either in-doors or out-doors, in the parlor, sitting-room, bed-room, garret, cellar or yard, combining within itself a complete fecal closet, without water or earth, or drains or soil pipe, although they can be attached, if deemed advisable, to any sewer outlet, and their contents removed from outside the dwelling, without the annoyance of entering the premises for that purpose.

After being used, the shutting down of the lid, not only destroys all offensive odor, but produces immediately the finest fertilizer in the world, and by turning the spiggot nothing but

a clear, inodorous and inorganic water will pass out, which can be allowed to run into the gutters, and from thence into the river, doing away completely with plumbers' work and fixtures, and even the sewers, if deemed necessary.

Besides this receiver, there is an automatic ash-sifter, with receptacle for the ashes, cinders, floor dust, and broken glass and china, suitable for use in or out of doors without emitting dust of any description, consisting of an ash-sifter, a receptacle for the fine sifted ashes, a receptacle for the large cinders, a receptacle for the floor dust, and a receptacle for the broken glass, china and other waste, and so constructed that garbage tanks holding the refuse of the kitchen can be placed underneath the receptacle containing the sifted ashes, and the latter permitted to cover the garbage every time it is introduced into the tank and the lid closed, deodorizing and preventing its putrefaction. The organic matter of the liquid portion of the garbage is automatically extracted, while the water is permitted to run into the gutter in a pure and odorless condition, and the solid matter ground and dried for sale as a fertilizer.

The system is a complete oxidation of all solid organic matters, combined with the precipitation of those in solution, precipitation by subsidence, free from offensive odor, prevention of putrefaction and fixation of all soluble salts, thus preserving all the fertilizing properties possessed by the putrescible refuse.

Fertilizers.

It is proposed to utilize the solid excremental matters thus rendered harmless for fertilizing purposes, from the sale of which, enormous revenues may be counted upon. And by the means taken to secure this product, complete and thorough sanitation is secured.

The Company.

It is proposed to organize *The Sanitary and Fertilizer Company of the United States*, on the basis of the Patents which have been obtained for the whole system, and it is proposed to

introduce the system into every city and town in the United States, free of charge to the municipalities. They will be invited to make a careful examination thereof, and if satisfied, to enact ordinances requiring the citizens to use the proper apparatus of the Company, for which a reasonable charge will be made. The Company will remove the deoderized excremental matter, and all garbage and other putrefactive matter free of charge, and utilize the same as a fertilizer.

It is desired to get a few gentlemen interested in the project, with a view of introducing to the whole country the complete sanitary system of the Company. For which purpose they will be given full opportunity to make a careful examination of the apparatus and system, either in person or by experts.

For further information, call at the present office of the Company, at room 68,

FORREST BUILDING,

119 South Fourth Street, Philadelphia.

The Sanitary and Fertilizer Co. of the U. S.