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Sewage Disposal.

The Council of the city of Stratford have instructed the City Engineer to report on a scheme for the disposal of the sewage of the city. This is becoming a very important question in this country, as it has been for years past in older ones. The health authorities are anxious, as far as possible, to protect the health of the citizens, and to prevent the pollution of our streams is a very important step, and in this way they should receive universal support. In consequence of the growth of cities and towns, the collection and disposal of the mass of excrement under dry systems is found to be a very troublesome matter, and they are at best inferior substitutes for water carriage, and sewers and drains are necessary. Millions of money have been spent in trying to deal satisfactorily with this question, not only with a view to the purification of the effluent of sewage, but also to endeavor to make a profit out of the residuals. Yet no hard or fast rules can be laid down as to the best method to be adopted for the disposal of the sewage of any town, but the peculiar circumstances of each case must be considered before advice could be given on the subject—geographical position, physical arrangements, water supply, habits of the people, and the character and quantity of the sewage of the town being of the most importance.

In any case, it is necessary that the transmission of the sewage to the outfall should be effected as speedily as possible, and that the position of this outfall should be such as to cause no nuisance. The contents of the sewers should, if possible, be emptied by gravitation, as pumping is a constant expense, and economy with efficiency should, of course, be studied. The methods adopted are:

Carrying the outfall into a large body of water where no bad results will follow.

Broad irrigation, that is passing the sewage in its crude state over large tracts of land.

Intermittent downward filteration, passing the sewage in its crude state on to small tracts of land previously prepared by deep drainage.

Mechanical subsidence of the sewage in large tanks, the effluent passing on to land or into a stream.

Mechanical filteration of the sewage, the effluent passing on to land or into a river.

The introduction of lime or other precipitant into the sewage, which is allowed to settle in tanks, the effluent passing on to land or into a stream.

Where the first of these methods can be adopted no thought need be given to others, as no costly machinery will be necessary, and an abominable nuisance is thus got rid of once and forever. The second method, that of broad irrigation, has found considerable favor among eminent engineers and agriculturists. The great sewage disposal cry has always been, "Put back on the land what you have taken from it, or some day there will be no beef and no bread." The difficulty is to always find land in sufficient quantity and so situated as to be available for such purpose. Almost any soil is suitable for irrigation, provided it is well and properly drained. One hundred tons of sewage will cover an acre of land one inch in depth.

The third method is really irrigation of land to such an extent as the land will filter or purify the sewage, the effluent passing off pure, irrespective of any effect upon the crops which may be growing upon the land. A good, porous soil, drainage to a depth of six feet, will purify the sewage of about 1,000 persons per acre. There can be no doubt that earth has a most powerful deodorizing power. Experiments have shown that as much as eight gallons of sewage can be filtered through a cubic yard of loomy soil in twenty-four hours, the soil being drained at a depth of six feet, the effluent therefrom having obtained a wonderful degree of purity. Much, however, must depend upon the character of the soil of the filtering area and the strength of the sewage being operated upon. Land, when used as a sewage farm, requires constant aeration by being dug over or plowed. Clay soil should not be deep drained, but it assists greatly to top dress it with about four inches of ashes, which should be plowed into the soil.

This is the method likely to be the most suited to the requirements of the towns and cities of this country. The methods of mechanical subsidence of the sewage in large tanks has been tried in connection with irrigation and filteration without much benefit.

Up to the present time no chemical precipitation process renders the sewage effluent sufficiently free from decomposing matter as to make it safe to allow it to enter a stream without the intervention of the nitrifying and oxidizing effect of passing it through soil. If this is not done, what is called secondary putrification sets in and the stream is polluted.

The combination of filteration with precipitation has, it is asserted, been brought into successful operation in some European cities by what is known as the Ferozone and Polarite process, which will be more fully dealt with in these columns at a later date.

Galt is macadamizing one of its main streets.

The agitation for good roads is being enthusiastically received the country over. Object lessons in bad road-making are so general that proper methods are anxiously sought.

Timber for Bridges.

As timber is perishable, bridges made of it are temporary. Where timber is scarce, stone, concrete and iron are largely used, but where timber is plentiful its low, first cost secures its adoption. The life of a wooden bridge is from eight to fifteen years, depending largely upon the quality of the material. Whatever modesty is shown through conscious ignorance in criticising iron and its fabrication quickly disappears when we are asked to judge of the quality of timber, almost everyone being positive as to what is good timber. A first quality of a certain kind of timber is best suited for the work, but the first quality of any timber may be as different as the soils upon which it is grown. This timber should be sound, free from loose or black knots, heart-cracks or wind-shakes, and it should not be cut from dead trees. Seasoned timber, especially when it has been exposed to the direct rays of the sun during seasoning, is apt to have more or less cracks, called seasoned cracks, but must not be confounded with heart cracks and shakes. They can be distinguished from each other; the cracks, due to seasoning, are sharp, while those due to shakes are splintered. Well-seasoned timber wears longer than green timber; but since bridge plank is seldom kept in stock, and as councils rarely anticipate their needs, the material is invariably taken from the mills; sapwood is not desirable, as it will wear away faster and decay sooner. Wane or black edges are apt to occur in otherwise first-class material, but should not insure condemnation if only on one corner, if the plank can be laid with that side down; if on two corners it shows that the plank is from close to sapwood, and should not be used. Timber for joist or stringers should be subjected to the severest examination, as so much depends upon their strength.

The kinds of timber used mostly in this country for bridges are white and yellow pine, oak and cedar. Close-grained yellow pine is being used for planking and gives better satisfaction than oak; it is cheaper and less slippery than oak in frosty weather.

A number of creosoting processes have been tried with success, but unless the work is well done and all the cells and pores perfectly filled with the preservative material, the timber is injured rather than benefited. The flooring of either wood or iron bridges is subjected to the greatest wear and injury, and requires constant repairs and renewals. Councils should provide a suitable storage and keep a carefully selected stock of plank on hand, so as to secure the best being used for this purpose. The material must be paid for, and municipal councils ordering quantities can purchase cheaper than contractors. They are desirable customers and can secure the best quality.