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Sewage Disposal

The Installation and Use of Septic Tanks for Sewage Treatment by Isolated Homes

In small towns and on the farm, the common system of sewage disposal is that of privy pits or cesspools. This method fouls the ground and air, holds the wastes in a state of putrefaction which gives off foul gases, and the liquid leachings are liable to injure the quality of wells and springs.

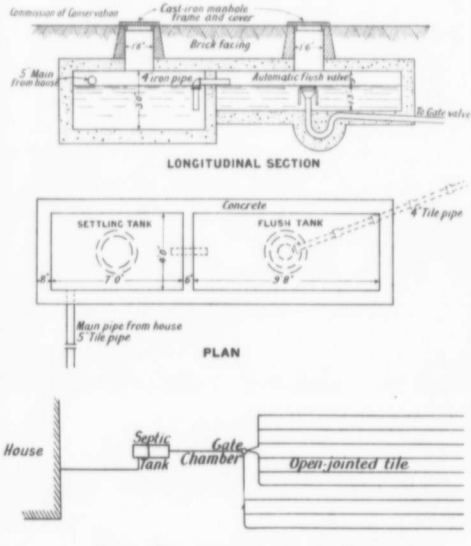
During recent years, many investigations of sanitary methods for the disposal of sewage of isolated houses have been made. The principle upon which the successful treatment of sewage depends is briefly as follows: When the air contained in the soil is brought in contact with dead organic matter in a finely divided state, a complete transformation takes place by the natural processes of oxidation and nitrification. As air is necessary for this purpose, it is essential that the waste be deposited on or near the surface. If the ground is saturated for a long time, purification of the liquid ceases; consequently the principle of intermittent operation of the disposal plant is necessary. The process of applying this principle involves the collection of the material away from the house, the settling out of as much of the solids as possible aided by anaerobic action, and the intermittent application of the effluent to the natural soil by surface or sub-surface irrigation, or to a specially prepared soil, as a filter bed.

A water supply is necessary for the collection of the material and this can be obtained and piped into the house by means of a hydraulic ram operated by a small stream of potable water or by means of a deep well fitted with windmill or pump force.

It will usually be necessary to dispose of the effluent from the settling chamber or septic tank by means of sub-surface drainage.

Illustration No. 1 shows a good type of tank for handling the sewage for a family of five and having a capacity of 350 gallons per day.

All sewage coming from the house passes into the settling chamber, where the solid matter to a greater or less extent is deposited. Owing to the character of the sewage, the decomposition of the solids is so active as to prevent any serious accumulation in the bottom of the settling chamber. It is necessary to inspect the chamber from time to time, and, if undissolved solids accumulate, to have them removed, probably about once a year. This accumulation should then be carried to the field and spaded into the soil at once.



Subsurface irrigation for level ground

Cut No. 92 **Design for Concrete Septic Tank**

The cost of a tank built of concrete, such as the one shown, will depend on cost of cement, wood for forms, etc., but the cost of all the material including siphon and cast-iron manhole covers will be, approximately, $60.00.

To secure subsurface disposal, 3-inch agricultural drain-tile are laid with open joints, the bottom of the tile coming within 12 inches of the surface of the ground. These drains should be laid with a slight fall, say two inches per 100 feet. The ground should be naturally or artificially so well drained that water will descend through it readily.

In a country with as severe a climate as parts of Canada, where frost will affect the ground to a depth of four or five feet, it would be necessary to cover the surface of the ground above the tile with straw, leaves, or other kinds of mulch in order to prevent the frost affecting it. The superficial area of the disposal plant outlined above would not be greater than 40 feet by 100 feet.

Illustration No. 2 shows a subsurface system adapted to level ground. The tile lines are divided into three series leading from the gate chamber, so that the ground utilized by two lines is given a complete rest while the other is in use. The length of tile required will depend upon the porosity of the soil. For a porous soil, one foot of tile for each gallon of sewage should dispose of the liquid; for clay there should be at least three feet of tile per gallon.—*W. J. D.*

The daily press state that the province of New Brunswick will undertake a scientific survey, extending over a period of three or four years, of its seven million acres of Crown lands. The survey will lead to a reclassification of these lands.

Electric Cooking

Comparative Tests Demonstrate its Advantages in Economy and Convenience

Electricity is rapidly replacing gas and other fuels for cooking purposes. Thus, the electric iron, which a short time ago was considered a luxury, has become a necessity and a money saver in the most humble household.

For cooking, electricity has long been known to be superior to older methods, but, in the past, the price of both the energy consumed and the necessary appliances has been so high as to prevent its general use.

Of late, electric central stations have become aware that it is to their advantage to offer a very low rate for this use, and prices ranging from 1c. to 3c. per k.w.h. are now quite common. As a result, more appliances are being used and, as the consumption increases, the manufacturer lowers his price. As an example: two or three years ago, a 5 lbs. electric iron cost $5.00; to-day, a better quality can be obtained for one half that price.

Apparently the science of electric cookery is to-day (speaking from an economic standpoint) just about where electric street railway operation was twenty-five or thirty years ago, *viz.* a recognized possibility, of which those familiar with results already obtained were most sanguine for the future, but which the public at large regarded skeptically as an interesting experiment for which the manufacturer—not they—must foot the bills.

Fortunately, the development of electric cookery methods has been more gradual and based on more carefully and broadly obtained data than was the case in electric railroading. At the present time its assured place in household and civic economies is mainly a question of publicity and of the minor improvements inevitable in the evolution of any line of apparatus intended for general use.

One peculiar feature of electric cooking, aside from safety, (no matches, no leaky pipes, no open but unlit valve cocks) is that in cooking meats, fish, fowl, etc., whether baked or broiled, the actual loss in weight or "shrinkage" is much less than when the