

## Sewage Disposal

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

The disposal of sewage is a continual source of trouble about the farm home and in scattered settlements. The use of privy pits or cesspools has proven ineffective and in many cases a source of disease. They hold the wastes in a state of putrefaction, which gives off foul gases, and the liquid leachings become a source of contamination for 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.

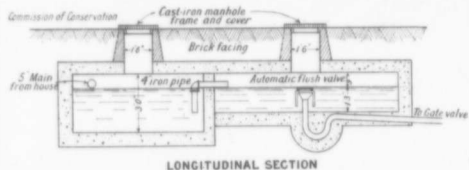
A water supply is necessary for the collection of the material, and this can be obtained and piped into the house by means of a hydraulic ram operated by a small stream of potable water or by means of a deep well fitted with windmill or force pump.

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

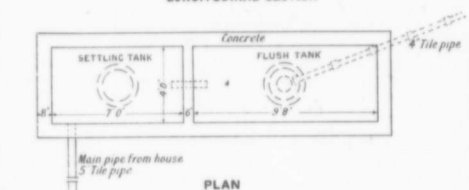
Illustration No. 1 shows a good type of tank for handling the sewage for a family of five and having a capacity of 350 gallons per day.

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.

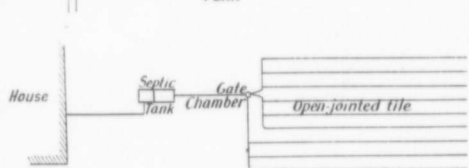
The cost of a tank built of concrete, such as the one shown, will



LONGITUDINAL SECTION



PLAN



Subsurface irrigation for level ground

City No. 92

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. One of these septic tanks was constructed at Aymer, Que., at a total cost of \$53.00.

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.

## Plan for Next Year's Seed

### Select the Best Part of the Field and Give it Special Attention

Of 400 farmers visited in Dundas County, Ontario, during the summer of 1916, only three were found to be following a really systematic selection of their seed grain; only 23 per cent were saving the best part or parts of their fields for seed. Practically all of the farmers visited stated that they cleaned their grain for seed, but it was found that 74 per cent cleaned it only once through the fanning mill. It is quite plain that sufficient attention is not being paid to the seed grain. It has, been shown, time after time, that, other things being equal, the best seed will produce the best crops. It is, therefore, surprising that not more than 23 per cent of the farmers were found to be keeping their best grain for seed, and that 74 per cent cleaned it only once through the mill. If the grain from the best part or parts of the fields is stored and then graded or fanned until all the small and inferior kernels are removed, the quality will be greatly improved. By improving the seed the net profit on a grain crop can be greatly increased, such action increasing the yield a little without increasing the cost of production.

It is not much trouble to keep apart the best portion of the crop

## Extension of Co-operation

### Forest Protection Makes Rapid Strides by Formation of New Associations

A new link has recently been forged in the chain of co-operative forest fire protective associations which are rendering such valuable service in protecting the forests of Quebec from destruction fire. The new organization is the Laurentian Forest Protective Association, of which R. L. Seabrook, formerly an inspector in the Maurice Forest Protective Association, is manager, and Paul Owen is secretary-treasurer, with headquarters at Quebec.

The territory which will be protected by the Laurentian Association comprises some 15,000 square miles in the Lake St. John Saguenay district, joining on southwest the boundary of the Maurice Association and extending northeasterly to the watershed between the Sault au Cochon and Bersimis rivers. The western boundary is a line extending in a northeasterly and southwesterly direction about half way between the St. John and Lake Mistassini. To the east, the association territory extends to the St. Lawrence river. The greater portion of the Laurentian park is included within the exterior boundaries of the territory enclosed by these boundaries.

This makes a total of some 700 square miles in the province of Quebec now under the protection of the St. Maurice, Ottawa River, Southern St. Lawrence and Laurentian Forest Protective Associations. A very large percentage of the licensed Crown timber land of the province is thus brought under improved methods of fire protection. The Provincial Government is partner in this arrangement, such cases, in consideration of the protection afforded unless Crown lands.—C.L.

for seed. It would even pay to give special care to a special small field from which to obtain seed for the following season's crop. There is, perhaps, nothing on a farm that will give a more profitable return than the time spent securing a supply of good seed. Plan now to save the choicest of this year's crop for next spring's seed.—F.C.N.

Thousands of persons every year are crippled or killed because they fail to place a value upon their own safety.

A one to two-year old soil, well ploughed under, will enrich the soil as much as would manure applied at the rate of 10 to 12 tons per acre.