

fifty maple trees each year we can get all the fuel we will need from the hedge. I understand that using waste material in this way, to produce by-products, is highly approved of by the scientists, and I expect to get a whole lot of good marks for using the pesky stuff in this way.

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Some farmers are getting excited
When they think of the things Mr. White did
But he needn't care if
They rage at his tariff
Poor Sir Jingo McBore is delighted.

* * * *

When we sugared-off or rather syruped-off I thought I had proven conclusively that it makes a great deal of difference what kind of land the maples grow on. The syrup was a beautiful amber, and full of the divine flavors that make true maple syrup worth protecting by law. The bush we are using this year stands on a gravelly knoll, and the trees are second growth timber of the thriftiest kind. Last year we made syrup from trees on a clay bottom, and it was almost as black as tar and lacked much of the quality it should have. We had some of it left over and could compare it with this year's product—and there was no comparison. The new syrup was in every way delightful—the old merely tolerable. I thought I had the matter settled, and was beginning to blow about the addition I was going to make to the scientific lore of maple-sugar making when a visitor stopped one of my rhapsodies to ask:

"Were there any soft maples among the trees you tapped last year?"

I admitted that there were.

"Then that accounts for it. One soft maple will blacken all the syrup in a whole bush. It is the soft maples that make the difference and not the land on which the trees grow."

So now I have to try my experiments all over again before I can be sure. And I suspect that there may be some truth in what the visitor said, for I seem to remember that soft maple bark was one of the ingredients of a pioneer ink for which I once saw a recipe. Truly the way of the amateur scientist is hard.

Disposal of Farm Sewage.

In spite of the many advantages of farm life the city dweller's home is more conveniently equipped and more modern in regard to its water supply and disposal of sewage than the common farm house. Because this is so is no reason why the rural dwelling should not and cannot be just as modernly equipped. The fact of the matter is, it can be and should be. Women of the country deserve as much as the city women, and they most of all merit a home with some modern conveniences, now easily installed. The obstacle to installing modern conveniences in the home has always been the disposal of the sewage, but people are beginning to know that it is a simple matter. They are beginning to enquire about it, hence this article.

HOW BACTERIA WILL HELP

If solid matter and liquid are confined in a tank for some time, forms of bacterial life will establish themselves in the contents and transform the solid matter into liquid and gas. Furthermore, if the resulting liquid be drained off in the surface layers of the soil, there are bacteria there ready to pounce upon the effluent and change it into plant food. Vegetation then takes the matter up where the small organisms leave off and transform the once objectionable sewage into plants edible for animal or man. All the matter resulting from the decomposition and fermentation in the tank may not enter into plant life, but it will be retained in the soil where it will do no harm.

WHERE THE WORK MAY BE DONE

Assuming a water system is installed in the house, the next step is to dispose of the sewage in some way. A septic tank recommends itself for this work through its effectiveness. A very simple tank will render the desired service, and any handy farmer can easily construct the tank. In the first place, a general explanation of the system would not be out of place. There should be at least two compartments in the tank, and the last compartment, where the valve is placed, should not be more than three feet nor less than two and one-half feet deep. For every occupant of the dwelling there should be at least three cubic feet of space in each compartment, and for every cubic foot of space in one compartment, or in one-half the tank, there should be 13 feet of 4 inch field tile laid, as will be explained later. The soil pipe from the house carries the disposal to the large compartment, as indicated in figure 1.

Here, through the efforts of bacteria, decomposition takes place, and liquids result which are carried over by an overflow pipe into the second compartment. In this part an automatic valve (c) is installed which trips at the proper time, allowing the liquid to flow out into a line of field tile, where percolation takes place and the soil swallows up the effluent.

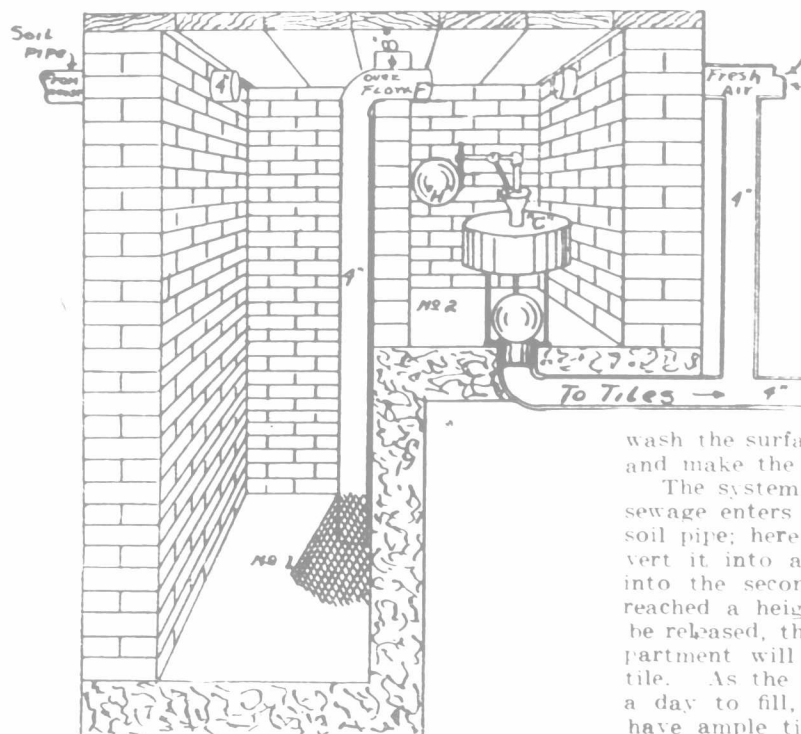
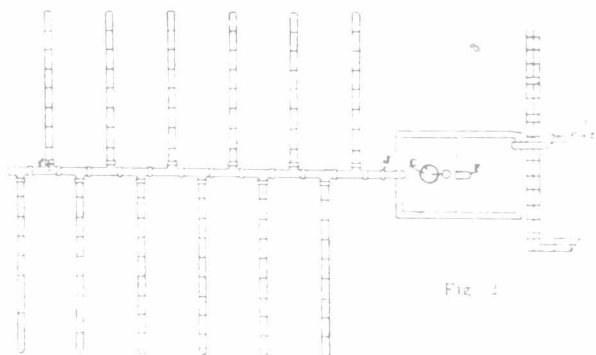


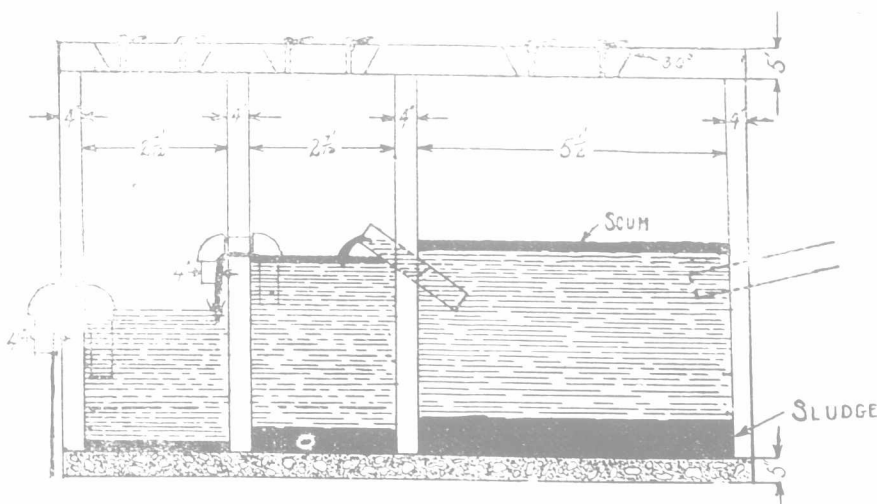
Fig. 1—Septic Tank with Valve.

It is necessary to have the tile laid on the level, so one part of the area in which the tile are placed may not become saturated when the upper part is dry. In order to accomplish this, the tank should be so located that the bottom of the valve in the second compartment will be on a level with the main tile leading to the system of



System of Field Tile.

field tile. An overflow pipe connects the first and second compartments, starting ten or twelve inches from the bottom of the first. As a safeguard, the opening in the first compartment should be protected by a wire screen the size of a barrel, with a mesh not exceeding three-quarters of an inch. The soil pipe carrying the sewage to the tank



Septic Tank at Weldwood.

should be connected with the closet, bath and sink, and extend upwards through the roof. In this case it would serve to carry off excessive gases and emit them into the atmosphere high enough so they would cause no inconvenience to the dwellers. Also, in the second compartment a pipe admits fresh air; this passes freely over the partition, space being left between it and the roof of the tank, and out through the soil pipe. The

automatic valve is caulked into a four-inch cast-iron bend, as ordinarily used by plumbers, and which is securely built into the bottom of the tank during construction.

The system of tiles for distributing the effluent through the soil is illustrated in figure 2. Some systems have been installed with sewer pipe for a main drain, but in all cases ordinary field tile should be laid for laterals. All laterals may lead from one side of the main, or they may be placed as indicated in the illustration. Local conditions and field levels will govern this to a large extent. The field tile should not be laid deeper than one foot from the surface, and not closer together than two feet, in light soil, and a greater distance in heavy soil. They should also be laid on the level, for reasons previously given. The tank itself should be constructed of brick or stone and made impervious to water. Concrete work will answer the purpose if care is taken to wash the surface of the walls with a cement wash and make the structure water-tight.

The system operates somewhat as follows: The sewage enters the first compartment through the soil pipe; here bacteria operate upon it and convert it into a liquid form. It flows slowly over into the second compartment, and when it has reached a height where the unlocking valve will be released, the whole contents of the second compartment will flow out into the system of field tile. As the tank requires from twelve hours to a day to fill, it will be seen that the tile will have ample time to empty themselves into the soil before the second flush takes place. To prevent gases from escaping into the atmosphere, a plank floor should be placed on top of the tank and this covered with about six inches of soil.

A SEPTIC TANK AND FIELD DRAIN.

Another system may be explained which has been in operation on "Weldwood Farm" for two winters and one summer, and has given perfect satisfaction. The principle involved in this system is similar to the one already described, but there is no valve which admits of flushing, and the effluent leads to a main drain in the field and ultimately empties in a bush about one-half mile away. The tank in this case was built with three compartments, thinking that the decomposition carried on in the tank would be more complete, and that no evil consequences could result from emptying it into the bush or field. The tank is built partly of old brick, because they were at hand, and cement, but it appears that a total concrete structure would have answered the purpose just as well. The tank itself is five feet high, 5 feet wide and 12 feet long, over all. The partitions are 4 inches thick, and the illustration will give the remaining dimensions. The location of the tank is responsible for its depth. Had it been placed farther down the slope, two and one-half feet of this depth could have been dispensed with, as it was only added to bring the tank to the surface of the ground. From six to ten individuals occupy the dwelling, but the full capacity of the tank was never required. The soil pipe leading from the house is of sewer pipe, and is laid with a fall of about 1 foot in 80, the last tile having a sharp dip into the tank. Between the first and second tank a sewer pipe is laid, as indicated in the illustration, one end being lower than the other.

In order to avoid the scum which is liable to gather on the tank and to prevent any circulation which is detrimental to successful decomposition. An iron pipe with two elbows was procured to lead from the second into the third compartment, but the expense of this proved rather too much, and were it being done again probably a sewer pipe would be used to lead from the second to the third compartment. The last outlet, or the one leading to the field tile was made of iron, also, and there is no reason why this could not be ordinary field or sewer pipe. The fluid of the last tank trickles out slowly into the tile and eventually into the field main drain. So far this system has been highly satisfactory. During the time of its installation it has only been cleaned out once, and no disagreeable odors have been noticed emitting from the tank during the last year.

A CESS PIT

Where a closet has not been installed in the house, but where people wish to avoid the ordi-

nary foul ordinary tance from 6 or 7 feet fermentat this tank gradually sandy so regard, l dation th finding i tually fe the water of them and in s sometime ence of a dwelling

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