The agricultural tile are 4 inches in diameter, and, being a foot long, will hold approximately half a gallon. On these data the number of tiles required can easily be calculated, to accommodate the amount of effluent coming from the flush tank at one flush.

These superficial pipes are the true distributors, but in order to prevent the ground becoming water-logged in any way, it is necessary to instal a system of deep drains. These consist of ordinary agricultural tile laid at a depth of 3 to 4 feet, in the intervals between the superficial branches. These deep drains must have a slight fall in order to keep them free of water, and are joined up at one end leading to the outfall.

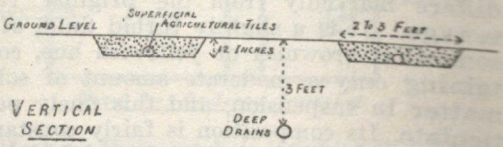
All these details will be more readily grasped by a reference to the accompanying plans.

The following description will explain the purifying process which takes place in the distribution bed.

The aerated tank effluent is introduced in a thin sheet to the bacteria lying in the superficial layers of the soil. They are, as we have seen, true aerobes, and naturally will be found more abundant nearest the actual surface; this fact is very important to remember, because, in digging the trenches in which the superficial pipes were laid, the depth was never to exceed 12 inches. This is for the reason that the aerobic germs do not exist in any numbers in the soil deeper than 12 inches.

The tank effluent fed to these aerobes contains a large amount of decomposable organic matter in solution, and their special role in life is to dispose of this material, converting it into simple salts and water. The salts are held in solution in the water, and carried down through the interstices of the soil, until the water reaches the deep drains, when it appears at the outfall as a clear liquid, possessing no smell or other objectionable qualities, in fact being indistinguishable from ordinary water. This remarkable final change being brought about by the aerobes in the upper layers of the soil

The soil richest in these aerobic bacteria is a good porous loam; gravel and pure sand contain comparatively speaking, none. Clay is a very bad soil to deal with under any circumstances, because it is very nearly impervious to water, thus preventing that natural and necessary percolation taking place which has been referred to already.



The final effluent from one of these small plants, properly constructed, is a very fine one indeed; as a matter of fact I do not know of any other process or system of sewage purification which will give such a high standard of purity as regards the final effluent. The only unfortunate circumstance in this respect is the inapplicability of this scheme to large amounts of sewage; the land requisite mounting up to impracticable proportions in those cases where large amounts of sewage have to be dealt with.

Another point worthy of notice, is that these plants are suitable to all climates, hot or cold. No fears need be entertained about frost; although the distribution bed is so very superficial. the pipes never freeze up, the effluent from the tank is always warm, and by the time it is cooled down, it has gone down into the deeper layers of the soil where the temperature is above freezing point

Again, these plants have another recommendation, the tanks are all beneath ground, and the distribution beds are not unsightly at any time, and may even be incorporated into an ornamental garden scheme. As a matter of fact, the cinders are the only part visible in the whole plant.

I have installed a good many of these plants during the last twelve years, and in only one case has there been any complaint whatever. In that instance, the plant was virtually ruined by the owners hitching up a big laundry to the drainage scheme, and from this laundry there was turned out such a tremendous quantity of soap curd, as to clog up the distribution bed; some slight idea of the quantity of soap curd produced may be formed, when I state that over a ton of soap was used annually in that laundry.