

# THE Sanitary Review

SEWERAGE, SEWAGE DISPOSAL, WATER SUPPLY AND  
WATER PURIFICATION

## APROPOS OF SEPTIC TANK ACTION.

We publish in this issue a paper by C. E. Lawton, F.I.S.E., on the bacterial treatment of sewage. The author has some interesting and pointed remarks to make with reference to septic action in sedimentation tanks. We find the oft, of late, reiterated statement: "Such a tank will be found to produce an effluent containing a great quantity, and at times more solids in fine suspension than the liquid entering the tank, to the detriment of the subsequent operation of filtration." And, again: "A large percentage of the solids in suspension (generally estimated at 75 per cent.) are undigested by this treatment. The removal of the same must take place by some means."

Shall we again repeat the now well-known finding of the Royal Commission on Sewage Disposal? "It must, therefore, be said that some of the more important claims which were originally advanced in favor of septic tank treatment have not stood the test of experience."

In spite of the most emphatic statements, based on experimental and practical data, that the chief claim for septic tank treatment, viz.: **"The total liquefaction of organic solids"** can no longer be said to have any existence in fact, we, however, even up to the present date, are being confronted with articles and statements in technical journals which take no cognizance of the newer knowledge regarding so-called septic action.

The mills of the gods grind slow, and our pet theories are writ in almost indelible ink.

Can any sanitarian, having regard to the newer knowledge anent septic action, say that the United States Court of Appeal could at the present time grant the five statements of claims which they did in the well-known Saratoga Springs decision?

Let us again examine the wording of the five claims allowed.

No. 1. "The process of purifying sewage, which consists in subjecting the sewage under exclusion of air, of light, and of agitation to the action of anaërobic bacteria until the whole mass of solid organic matter contained therein becomes liquefied." Here we have a distinct claim made, an advantage and benefit alleged, and legally allowed, inasmuch as "the whole mass of solid organic matter contained" is said to dissolve into liquid. Yet, we have the Royal Commission's statement: "From careful observations, extending over two years, which we made at Exeter (the original septic tank) and Ilford, we found that, without allowing a correction for colloidal matters, the digestion at Exeter was about 25 per cent. and at Ilford about 30 per cent."

If this decision of the Royal Commission stood absolutely alone, which, however, it by no means does, could it now be held that such claim as the above would be seriously considered in any court of law?

We surely are justified in assuming that, if a patent process is based upon obtaining certain defined results, and it is clearly shown that these results are not obtainable, then just as the claims are worthless, so is the patent. But, of course, we have heard somewhere that "the law is a hass," and we do not pretend to interpret the law in these columns.

Take the other four claims allowed. They all commence with the words: "The process of liquefying the solid matter contained in sewage . . . until the solid matter contained in the flowing sewage is dissolved." And yet, we now have Lawton saying: "The tank will be found to produce an effluent containing a great quantity, and at times more solids in fine suspension than the liquid entering the tank." Not only Lawton, but the Royal Commission actually give figures showing the increase of solids in the flowing sewage at Burnley, Huddersfield and Leeds. At Huddersfield, after eleven months, there were four times more solids in the flowing liquid than to commence with.

Now, who are we to believe? Shall we take, what is the consensus of modern sanitary conclusions, or shall we continue to accept claims made several years ago?

If the septic tank was the "end all," or the "final step" in the process of sewage purification, we might even now accept it, and rest content in the liquefaction of a fraction of the sludge. But the septic tank can only be looked upon as the preliminary step in the process of sewage purification, a method for the removal of solids by sedimentation, stripped of the now exploded claim of "sludge elimination."

Even as a preliminary step, grave disadvantages are alleged. It is stated, and has been shown, that the act of passing the flowing sewage over a rotting bed of filth allows the absorption of properties creating greater difficulty in final oxidation or purification of the sewage liquid. What, then, are some of us fighting for? Apparently the ghost of a rotting corpse, and little more.

The above may require some modification, for we read in the Royal Commission report: "At the same time, we think that in certain circumstances the adoption of this method of treatment, as a preliminary process, is efficient and economical."

"Certain circumstances." What are they? Only where a plant is so small, or an authority operating the tank so poor, making it either of little importance or financially impossible to do anything else but neglect the tank, and so allow the sludge to form a putrefactive base for the flowing liquid.

Even, however, when it is determined to neglect the sludge and allow septic action, certain modifications in the form of the tanks are now shown to be desirable.

Faith in septic action determined certain factors in construction. Want of faith has upset these factors.