

# PHYSICAL OR UNDERGROUND PURIFICATION.

The following is an abstract of a paper by B. W. Richardson, M. D., F. R. S. &c., from the Journal of the Society of Arts, in the *Sanitarian* :

In speaking, a few months ago, on one of the departments of physical purification, I seem to have startled the proprieties of many of the people by the assertion that absolute cleanliness—cleanliness of the body and mind, and all that belongs to them—is the beginning and the end of the sanitary design, and that such perfect cleanliness would wipe off all the diseases which cause at this time the leading mortalities. I do not withdraw from that statement a syllable, and I again place this subject of national purification first on the paper.

Into all the varied studies connected with this argument it were impossible to enter. It will be fittest to take two of the Augean stables which have to be cleansed.

*Underground Purification.*—The complete removal from our communities, day by day, of all their organic excreta, is still an unsolved difficulty, which, remaining unsolved, is a block to every step of perfect purification.

We are yet distracted with the debate ever going on between the advocates of the combined and the separate systems of drainage. Shall our organic excreta go with the storm-water into the river and sea, or shall the water go to the river and sea, the sewage to the land? Unlike our neighbors on the other side of the channel, we have agreed to give up the cesspool and to divide on two questions which they have not, seemingly, admitted, and one of which—that of disposal in running streams—they have long legally prohibited. But in giving up the cesspools, have we greatly advanced, so long as we pollute the running stream and lose the natural fertilizer of the land?

Looking back on all the controversy for the last thirty years, and reading back still farther, I feel we have not advanced. I do not think it would be wise to return to the most scientific system of cesspoolage, but I cannot conceive any next worse plan than the plan of passing the sewage with storm-water, even on the most scientific system, into running streams, and robbing the land of its greatest requirement for its fruitfulness. I submit, therefore, as a point to be argued out, that this society can never be soundly assisting sanitation until it assists none other mode for removal of excreta than the separate system.

In saying so much for the separate system I do not, however, wish to contend for the introduction of that system in the hard and unchanging line which some would fight for. I know quite well, from the inspections I have had to make, officially, of different towns and districts, that there are centres of population in which the separate plan, in its rigid application, is not suitable. A town may have no river into which its storm-water can run. A town may have a river but no land near to it which can be cultivated.

These conditions may affect details, while they need not affect the principle. For storm-water for which there is no natural outlet there is always the good resource at hand of storing it for domestic use. For sewage that cannot be utilized on land near to the community which yields it, there is always land not far away which is waiting for it. In these days there need never be necessity for any difficulty in the removal of sewage day by day from the largest centres of population, presuming always that it is not mixed and increased in volume by storm-water.

Closed sewage-tanks moveable by night train, closed sewage-tanks movable by steam-power on sewage canals and rivers, closed tanks movable by steam-power on the sea, could convey away all this