

In England was almost coincident, as he says, with the introduction of the water carriage system and the pollution of streams from which water-supplies were drawn. "Since the introduction of water-closets, and I believe as a direct consequence of them," he adds, "we have had four severe epidemics of cholera, a disease not previously known, and typhoid fever, previously almost or quite unrecognized, has risen to the place of first importance amongst fevers in this country."

What I want to insist upon, said Dr. Poore, is this : That

THE PROPER DESTINY OF ORGANIC REFUSE IS IMMEDIATE BURIAL

just below the surface of the soil. Most of the shortcomings of modern sanitary methods are due to the fact that in our dealing with organic refuse we commit a scientific error—*i.e.*, we pursue a course which is in opposition to natural law. This error consists in mixing organic refuse with water. When organic refuse is mixed with water it undergoes changes which differ widely from the changes which it undergoes when mixed with earth. According to Wollny, the process of oxidation of organic matter and the formation of nitrate takes place most readily when a moderate amount of moisture is present. The most favourable amount is about 33 per cent. and if the moisture rise above or sink below this amount, the process of nitrification and the formation of carbonic acid is hindered. When water is in excess, the amount of free oxygen is insufficient to favour the growth of mould fungi ; and in place of oxidation, putrefaction takes place with the formation of ammonia, free nitrogen, carbonic acid, and carburetted hydrogen. In the treatment of putrescible refuse, so that it shall not be a danger or annoyance, what we have to aim at is nitrification rather than putrefaction ; and it is certain that, by mixing with water, putrefaction is encouraged and nitrification delayed. We clearly ought to encourage oxidation, and make putrefaction impossible. Putrefaction is certainly a great cause of ill-health. It was the putrefaction of wounds (now happily almost unknown)

which but a decade or two ago converted hospitals into something but little better than charnel houses. It is the putrefaction of organic refuse, mixed with water in cesspools and sewers, that causes that long list of ailments which we ascribe to the inhalation of "sewer air." The opinion is commonly held that the dejecta of typhoid patients and cholera patients do not become dangerous to others until putrefaction has set in.

The fact that the zymotic poisons—the germs of disease—are *particulate and alive* is one which has most important bearings on the subject under discussion. If the poison were a chemical poison ; then dilution would practically do away with its power for harm. No amount of dilution is capable of destroying a zymotic poison ; in fact, it is not impossible that the mere mixing of organic refuse which contains a zymotic poison with water may be the means of keeping it alive and causing it to multiply. When a mass of organic matter, charged with zymotic particles, is mixed with water and washed out of a house, the water will carry the poison with it wherever it may chance to flow or trickle, to water course, well, or any other source of drinking-water ; in fact, the dissemination is as perfectly and thoroughly done as if dissemination of poison were the main object which we had in view. When dealing with organic matter impregnated with zymotic poisons, mere dilution with water increases rather than diminishes the danger. As long as the poisonous organic refuse is concentrated, its repellent qualities are such that there is little chance of its gaining access to the human body. The microbes contained in it are theoretically capable of infecting an almost indefinite quantity of water, and this large quantity of water masks the repellent qualities of the stuff, and thus the danger of infection is greatly increased.

There is little room for doubt, continues Dr. Poore, that, "in this country at least, water has been the great carrier and disseminator of the poison of cholera. What is true of cholera is also true of typhoid. The first principle in dealing with epidemic