The fact of the matter is, it is not a question of principle, a question of what principle, but a question of application of acknowledged principles.

In Great Britain the general aim of sewage disposal has been and is to obtain a non-putrefactive effluent. The aim has been to remove sewage pollution from streams to the extent only of removing a nuisance. Average strength sewage contains approximately 3,000 pounds of dried solid matter per each 1,000,000 gallons of sewage, 200 pounds of which may be mineral and 100 pounds organic.

It has been found that in connection with rivers whose areas are thickly populated, that they cannot digest all this matter and that they become foul in appearance and odor. In Great Britain, with one or two exceptions, the cities and towns do not obtain their domestic water supply from rivers flowing through inhabited areas. The water supply is generally from upland collecting areas or natural lakes where there is no chance whatever of sewage pollution. Hence, efforts in sewage disposal in Great Britain have almost solely been directed to preserve the natural beauty and æsthetic appearance of streams and not to make them fit as sources of water supply.

The city of London is an exception, as it takes its water supply from the upper Thames and its tributaries, which receive sewage only partially treated. The London water supply undergoes most thorough purification treatment before distribution.

A great many of the cities of the United States take their water supply from rivers receiving sewage. It is customary in the States to purify all such water supply and insist only on partial treatment of sewage.

The question of disinfecting sewage—that is, of exterminating the disease germs—is, from the view of application, comparatively speaking, new. It has never been pretended by those who knew, that the generally recognized methods of sewage disposal, produced drinking water. Fakers there have been who have set up such pretensions, but such have been connected solely with commercial ventures. Germany was the first country to apply the principals of sewage disinfection, and the States of America have given more attention to this part of the subject than Great Britain or any other country apart from Germany.

In 1909 E. B. Phelps, of the Massachusetts Institute of Technology, published a report of extensive investigations and experiments in connection with the disinfection of sewage. These investigations and results have brought the whole subject of the disinfection of sewage effluents acutely before sanitarians.

Phelps showed that sewage is amenable to high degrees of disinfection by the use, as a mixture, of very small proportionate amounts of chlorine derived from chloride of lime. He showed that 3 parts per million of chlorine will satisfactorily disinfect the effluents from ordinary sewage works constructed for the removal of putrescibility, the bacteria being removed by 98 to 99 per cent., the cost being from $1 to $1.50 per million gallons of sewage. He also showed that, from 5 to 10 parts per million of chlorine will disinfect screened or settled sewage (that is, sewage from which part of the solids have been removed), at a cost of from $1.50 to $3.50 per million gallons. Phelps showed that absolute sterilization was not necessary, and that partial sterilization or disinfection was sufficient to kill off the disease germs.

These practical investigations and conclusions were interpreted by some as likely to revolutionize sewage disposal processes. They form the only possible foundation for the somewhat vague supposition that "sewage disposal methods are undergoing a transision stage."

Such investigations have, however, had no appreciable effect upon the standard methods of sewage disposal.

The preservation of the natural condition and appearance of a stream and the avoidance of all nuisance from odors is just as an acute question as ever. Disinfection of sewage will not remove or diminish the 3,000 pounds of solids per 1,000,000 gallons of sewage entering a stream. Disinfection may retard putrefaction for a time, but only for a time. Disinfection will not satisfy the person who sees actual filth floating in a stream, no matter how sure he may be that all the germs of typhoid or otherwise have been eliminated. On the other hand, disinfection or elimination of disease germs added to the standard processes for the avoidance of actual nuisance may in many cases prove valu-