

are favorable, the soil suitable, and the management good, the purification can be made complete and the effluent safely be discharged into any stream furnishing potable water.

While existing sewage works, if carefully compared, lead the observer towards these conclusions, we are now, through our recently acquired knowledge of bacterial action upon sewage, also able to explain them, at least partially.

A jar of fresh sewage if left standing in a warm room soon becomes putrid. The number of bacteria increases until a maximum is reached, after which the water assumes a clear color, and a sediment forms on the bottom. After a sufficient time the main body of water is practically free from putrescible organic matter and bacteria, and contains in solution but the gases, which are the products of decomposition. The purification is hastened by warmth and aeration, and it is retarded or prevented by cold or lack of oxygen—conditions which are respectively favorable and unfavorable to the development of germ life. If sewage is sterilized by boiling or otherwise, and retained in this condition, no purification takes place. It is therefore necessary, first, to provide conditions which are favorable to the life and action of bacteria upon the sewage;

and secondly, to prevent the resulting decomposition from being offensive, through an absorption of the gases, either by large bodies of water or by the soil. With these requirements as a basis we can arrive at some practical results.

The discharge of sewage into large bodies of water will not be objectionable if the dilution is great enough to supply the required oxygen, and to absorb all the gases of decomposition. When the temperature of the water is high, bacterial action is more rapid and the dilution required greater than when the water is cold. This fact is demonstrated by comparing the condition of streams or lakes receiving sewage in southern with those in northern latitudes. A warm current will, therefore, show a complete purification to have taken place earlier along its course than a cold one in which bacterial action is retarded; instance the summer and winter conditions of the canal and the Desplaines River, which receive the sewage of Chicago, and where the polluted condition can be traced much further down stream in winter than in summer.

Further, as salt water is not favorable to the life of bacteria, purification is slower, and sewage remains therein in a decomposing condition for a longer time than if the water is fresh.

MISCELLANEOUS NOTES AND EXTRACTS.

THE RESULTS OF KOCH'S LYMPH.

On this the Medical Record, one of the very highest medical authorities, says: It is now over three months since Prof. Koch began the experiments with his lymph upon man, a sufficient time to determine whether consumption in its earliest stages can be cured. Prof. Leyden has treated 127 cases, Dr. Guttmann 75 and Prof. Gerhardt 79; all in addition to the cases first treated, directly under Koch's supervision. Among these 281 cases, we hear of four deaths, while Dr. Guttmann announces four cures. Most of the remaining cases are simply "doing well." If any experienced physician were to treat 281 cases of phthisis in the very initial stage by methods already known there is very

little doubt that much better results could be obtained, even within two or three months, than a simple one per cent. of cures. There is a belief that it is more effective against laryngeal tuberculosis, but we hear as yet of no announced cures. Its specific effect upon lupus is, so far, quite interesting. Temporary "cures" have certainly been produced by it. Pasteur is quoted as saying: Up to this moment there has not been a single authenticated cure, not even of lupus. Dr. Bergmann himself has seen a patient suffering from lupus return to his hospital fifteen days after having been discharged as cured, a severe relapse having occurred. There is no real certainty as to the consequences of the treatment. The medicament is of unheard of virulence, and the reactions