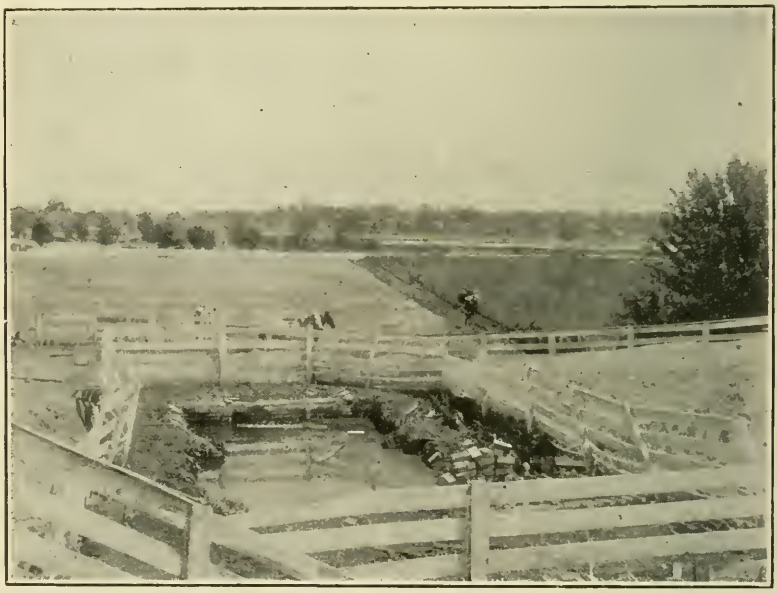
been another family supplying the dairyman with milk in addition to the two families that he named, and he might have concealed this fact, knowing there was some sickness there. In this case the dairyman would be far more culpable.

This is one of the few scarlet fever epidemics traced to infected milk that have been reported in this country.

Sewage Disposal at the Indiana State Reformatory at Plainfield.

Severance Burrage.

The problem which recently presented itself to the authorities at the State Reformatory, at Plainfield, was a pretty one. An appropriation of $6,500 was available for the purpose of securing a certain amount of



Old Cesspool, showing method of disposal of sewage prior to new system.

plumbing in each of the so-called "family" buildings and to install a system of sewage disposal that first, would be sanitary, and second, would

be of use in fertilizing and irrigating the fields on which crops are raised. Until the present year the sewage from the large out-building had been carried in a southeasterly direction to an open settling tank or cesspool, situated on the edge of the river bottoms. This cesspool in the summer time became a mass of fermenting filth, obnoxious and unhealthful. Moreover, it could not be utilized in any way. Now, with the introduction of plumbing into many of the buildings there would arise an appreciable

Site of Septic Tank north of the grounds, looking toward field to be irrigated and fertilized by the effluent from the tank.

increase in the amount of sewage and it would be out of the question to continue the old method of disposal. Up to this time practically all of the sewage came from one large out-building, which was nothing but a combination of closets and urinals, and while this made a considerable amount of sewage, both solid and liquid, there would be a considerable increase with the introduction of plumbing into all of the "family" buildings. This plumbing, including water-closets, wash-basins, and perhaps an occasional bath-tub.

There were two possible methods of sewage disposal that could be considered as practical in this instance, one being the system called "irrigation," which simply depends upon the distribution of the sewage directly on the fields (in this case on the river bottoms) that are being cultivated, and the other method was the septic tank system. After a very careful consideration of all the conditions, it was finally concluded to adopt a system which was a combination of both the septic tank and irrigation. This conclusion was arrived at because, should the raw sewage

Site of the Septic Tank north of grounds, as seen from main drive.

be thrown directly upon the fields in question it was feared by some that the odor from this raw sewage would be offensive, if not unhealthful, at certain times, and in view of the fact that these fields were adjacent to the main drive to the Reformatory, should any obnoxious odors arise, they would be noticed by everybody, and might be the cause for critical comment. In all probability there would not have been sufficient sewage at any one time to cause anything that would be called a nuisance in the manner just described, but it was thought better to err on the side of safety, and consequently the present plan includes a septic tank in which

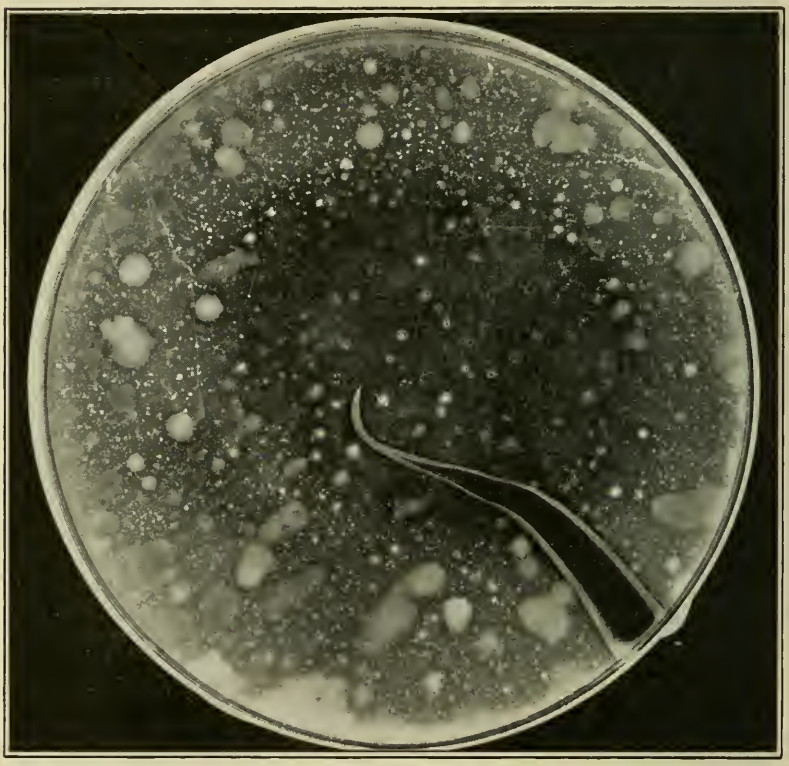
the sewage receives preliminary treatment before being distributed on the fields.

A casual survey of the Reformatory grounds showed at once that the lay of the land was so favorably arranged that the sewage could be collected and distributed by gravity. At no point would there need be any pumping; and yet when it came to make an accurate survey, including the levels, it was found that there were a number of quite difficult points to settle as to the best lines for the sewers to take in order to collect the

Field to be irrigated and fertilized by effluent from Septic Tank, as seen from main drive.

material from all the family buildings, and it was finally thought advisable to make two main lines of sewers, one leading to the fields northeast of the Reformatory, and the other following in general the line of the old sewer from the out-building in a southeasterly direction. Each one of these sewers ends in a septic tank in which the sewage undergoes a certain fermentation, and only the clear, or comparatively clear effluent passes out of the septic tank as an inoffensive liquid, very useful in irrigating the fields. Of course, this effluent from the septic tank is not as rich in fertilizing properties as the raw sewage would be, but it is free

from any of the objections which might arise should the raw sewage be distributed upon the fields. The main problem in connection with the designing of the sewage disposal plant, furnished the material for the graduation thesis of two students of Purdue University, Messrs. Beuhler and Armstrong, who graduated in 1902. Their thesis work was done



Agar Plate, showing colonies of bacteria in 1-500 cu. centimeter of sewage as entering Septic Tank.

under the direction of Mr. C. V. Seastone of the Civil Engineering Department of the University, and the writer. The lines for the sewers were laid by another student of the University, Mr. Alva Baynes, who spent a large part of his summer vacation on the grounds. When it came to actually do the work it was found advisable, for one reason and another,

to depart somewhat from the lines as designed by the gentlemen mentioned above in their thesis work, and it was also found advisable to depart somewhat from certain points in the specifications as set down by these same gentlemen. For example, the original thesis design called for but one main sewer collecting the material from all the family buildings

Agar Plate, showing colonies of bacteria in 1-500 cu. centimeter of effluent from Septic Tank.

and the hospital, etc., leading in a northeasterly direction toward the so-called garden, but the system as now existing includes the two main sewer lines as described above, one leading in a northeasterly direction, and the other in a southeasterly direction, and each ending in a septic tank.

All of the work of laying the pipes and building the septic tanks, etc., was done by the boys of the Reformatory, and thus the expense of the whole system was very much smaller than it would ordinarily be. The trenches for the pipes vary in depth from two to seventeen feet, and at many points considerable difficulty was encountered by running across springs or currents of underground water, which interfered very materially with the progress of the work. At the time of writing the paper, the sewer and septic tanks were all ready for reception of the material. The plumbing, however, has not yet been completed, but as soon as this is done the sewage can be turned into the pipes and the result of the method of disposal installed will be watched with much interest. It is practically the first experiment of this kind attempted by any institution in this State; and if successful, and there is no reason why it should not be, it should serve as a type or an example for many of the State institutions, and even for many of the smaller towns of the State.

Some Recent Mound Investigations in Jefferson County, Indiana.

Glenn Culbertson.

During the summer of 1902, through the interest, and under the direction, of Miss D. L. Cravens, of Madison, Indiana, several mounds located in Jefferson County were examined, and two were explored. The writer was asked to assist in the investigation.

The purpose of this paper is, in part, to give a record of the contents of the mounds opened, and in part to call attention to the fact that, in many parts of our State, and especially along the Ohio River and its larger tributaries, there are mounds and other evidences of the existence of a prehistoric people of which no record has been made, and which should be of great interest to science. Many of the mounds have been opened by curiosity or treasure seekers, or destroyed by cultivation, and the contents scattered or lost, and no record has been, or can be made.

As an example of the ruthless destruction of valuable anthropological material, a case may be cited of a Jefferson County farmer, who, in grading a plot of ground for building purposes, ploughed up at least twenty skeletons, many of which were said to be in a fair state of preservation,