

weather of winter would kill the organisms, but as a matter of fact they were not like some of the disease-producing organisms, and lived perfectly well at a low temperature. Having determined upon a standard for a certain gathering ground, it was remarkable how good a guide this was to contamination at other points of the same ground, soakage from a farm or other organic contamination could easily be detected. By following up a stream a point would be found where the water was pure, and on comparing the results of a bacteriological examination of such a sample with that of a sample polluted, the difference was at once very marked. It was possible to add a few millions of typhoid organisms to a gallon of perfectly pure distilled water, and then to have that water examined by chemical methods and declared to be perfectly pure. Such a condition did not often happen in nature, but it was the fact. A bacteriological examination of such a water would show it to be teeming with organisms. In the same way many slight pollutions in a large gathering ground could only be detected by such a comparative method as he had described.

Having obtained one's standard it was only necessary to examine the feeders as they entered the reservoir. If the number and species of organisms were found to be markedly greater than in uncontaminated feeders this would, of course, indicate that the source of contamination should be sought for and removed. Again, if this method were adopted, a weekly examination of a water supply would give the most sensitive results, should any slight pollution take place. As showing the increase in the number of organisms in the rainy period, Dr. Robertson said that the Thames water sometimes contained as many as 160,000 in eighteen drops. Generally taking one month with another, there was an average of 20,000 or 30,000, but during the five years ended 1897, the average for one company was 50,560, a condition in which the water could never be supplied to the general public without, in all probability, something happening. Dr. Robertson went on to explain the methods of collecting water for examination. Small tubes drawn out to a point were used; these could be hermetically sealed and kept pure. When they were dipped in the water the point was broken off with a pair of sterile forceps, and on being withdrawn they were again sealed. If the examination was not to be made immediately they must be placed in a cold storage, as at a temperature just above freezing point, the organisms did not multiply. For examination, the water should be mixed in glass dishes with beef jelly, which is a good nourishing medium, and when the colonies of organisms are visible to the naked eye, the dishes might be placed against a black ground, such as black glass, and the organisms counted with the aid of a hand lens, the squares into which the black glass was divided assisting the counting.