

are to be found in the bulletins of the Inland Revenue Department will be seen to contain chlorine in varying amounts from 1 to 10, or more parts per million. We must not, however, forget that in many parts of Canada salt is found in the soil, and in various deep-seated springs, and it is therefore absolutely essential that the location and surroundings of the well should be known to the analyst before he pronounces an opinion on the results of chlorine estimation. Many wells in Winnipeg and other parts of Manitoba contain from 200 to 300 parts of chlorine per million, and are yet free from sewage pollution.

11. The only other feature in water analysis to which I need refer is the estimation of dissolved organic matter essentially non-nitrogenous in character, in other words, of vegetable origin. Such organic matter is with difficulty destroyed by oxidation and requires the employment of the most powerful oxidizing agencies we know to effect its decomposition. For the purpose we always use permanganic acid, a sample of which I show you in solution. Observe its beautiful deep purple colour and see how the addition of a very small quantity of water, impure from decomposing organic matter in solution, serves at once, or at least in a very short interval of time to cause the purple to become less and less intense, and shortly to disappear altogether. Now, by using a solution containing a known amount of permanganic acid, and adding it in excess to a measured quantity of the water to be examined, we can easily, at the end of, say four hours, estimate the excess of permanganic acid by chemical means, which need not be here explained, and thus obtain by difference the quantity used up in oxidizing the organic matter present in the sample of water. Since permanganic acid gives up a definite amount of its oxygen to this purpose, it is convenient to state the results of the examination as so many parts by weight of oxygen to the million parts by volume of water. The observation is usually made for two periods, viz., intervals of 15 minutes and 4 hours; the more easily oxidized organic matter being attacked in the shorter interval, and this part always includes any animal or more objectionable matter present. The following numbers quoted from Bull. v of the Inland Revenue Department will serve to give an idea of the indications afforded by this test:—