the results being given in parts per million, this means that we aim at estimating one part of nitrogen in one billion parts of water, or less than one-ten-thousandth of a grain per gallon. In order to give you some idea of how this is done I place in one of these tubes a column of 24 inches of water quite free from ammonia, and in another I place an equal quantity of water to which I have added ammonia in the proportion of one part nitrogen to one million parts of water. The two samples as reflected to you from the mirrors are of course quite indistinguishable from each other. To each I now add a small quantity of a prepared test liquid called Nessler's solution, and you will observe in the course of a minute or two that while the contents of the first tube are unchanged in colour, a faint brownish yellow colour gradually developes itself in the second tube. Of course it is possible in the laboratory to apply this test in such a way as to obtain still greater sensitiveness, but the illustration will serve to give you confidence in numerical statements of the results of analysis even when fractional parts of a million are expressed.

8. While the simpler organic bodies containing nitrogen yield this nitrogen as ammonia during decomposition, many of the more complex substances which enter into the composition of animal structure, such as albumen, fibrin, etc., form other proximate products of decay, these possessing the common property of being converted into ammonia when boiled with a strongly alkaline solution of permanganate of potash. The ammonia obtained by treating a sample in this way, after the ammonia already present in it has been taken off, is called "Albuminoid" ammonia, as suggested by Wanklyn, the author of the process, and is properly considered as a most important factor in the analysis. Indeed, if it were ever allowable to adjudge a sample of water for drinking purposes upon the indications of a single factor in the analysis I would select this estimation as the critical one. The author of the process, who in conjunction with other analysts, worked upon a very large number of samples of all degrees of badness, concludes from his experience that "0.10 per million begins to be a very suspicious sign, and 0.15 per million ought to condemn a water absolutely." This standard would go hard with Ottawa river water, which in 1888 gave from 0.12 to 0.27 in different samples; in March and April of last year gave 0.1