

has been very greatly improved in this respect. The brownish tint of the Ottawa river water, in common with many other Canadian rivers, as the Richelieu, the Yamaska, etc., is due chiefly to dissolved vegetable matter of peaty origin. Alumina has the property of precipitating such colouring matter, hence the improvement on adding alum. In reference to this feature, namely, colour in water, I may say that while it is desirable on æsthetic grounds that a drinking water should be as colourless as possible, we know of no positive reason for condemning a highly coloured water as unwholesome. I shall show later that the presence of much organic matter, even though only of vegetable origin, and innocent enough in its character, is cause for anxiety and possible danger, and of course so far as colour helps us to ascertain the presence of such matter it becomes a valuable factor in the analysis; still we must remember that it is only as potentially, not as actually dangerous, that we object to the use of peaty waters, and we cannot therefore condemn them on the ground of high colour alone. The observation and recording of colour in water is of greatest consequence when the *same water* supply is studied from day to day. Then indeed, a change in tint corresponds always to a change in character; and the cause of this change must be looked for, if necessary, by a complete analysis of the water. For purposes of registering the observed depth of colour nothing better is known to me than the scale devised by Lovibond, in which a set of glass slips of fixed and comparable colour values is employed. I am able to shew you the standard glasses, but a full illustration of the mode of using them would require more time than we have to spare. The depth of colour is expressed in terms of this scale in Bulletins 15 and 18 of the Inland Revenue Department.

4. *Turbidity and Clearness* are due to matter in suspension or its absence, and vary according to conditions which have already been explained.

5. *Oxygen in Solution* becomes a valuable factor in the analysis of the water of the same stream at different points of its course, as I have already illustrated in the case of the Seine at and below Paris. The estimation is, however, of no value when a single sample is concerned, since the amount which may be present in a perfectly pure water varies