depth of the lakes, the summer temperature at the bottom is probably everywhere >4° C. The surface temperature varies in the course of the year at any rate from 0° to 24–26° C. The high summer temperature is to a great extent due to the broad littoral zone, the water of which in early summer is heated above the temperature of the air in direct sunlight. The heat collected is distributed by currents through the whole water of the lake. Owing to the shallowness and small size of the lakes, they follow the variations in the temperature of the air on the whole fairly exactly. The summer period of stagnation is probably longer than the winter period throughout the greater part of the zone. In all the deeper lakes there is a very distinct main "Sprungschicht," which in late summer probably occurs at a depth of 20–25 m. On the temperature in Baltic lakes see further especially Halbfass (1901, p. 60), Ule (1898, p. 32), and Seligo (1905b, p. 201).

The *transparency*, which, as is well known, depends almost exclusively on the amount of material dissolved in the water, is always slight; greatest in winter (7–8 m.), less in summer (rarely over 4–5 m.): see Halbfass (1901, p. 78) and Ule (1892, p. 63). Seiches have been studied by Halbfass (1903b, p. 16; 1904, p. 65).

The *colour*[1] of the Baltic lakes is hardly ever blue, as it may be exceptionally in alpine lakes, the water of which is purer; it is rarely

[1] There is a long series of researches dealing with the colour of fresh water. The older literature is cited in Forel (vol. ii. p. 462). In recent times there are investigations by Spring (1883, p. 55; 1886, p. 814; 1896, p. 94; 1897, p. 578; 1899b, p. 99; 1905, p. 101); Klunzinger (1901, p. 321; 1902, p. 338); Ule (1892, p. 70; 1894, p. 1; 1901, p. 16a); Aufsess (1903, p. 1; 1904a, p. 186; 1904b, p. 678; 1905, p. 1).

There are two theories to explain the variations in the colour of the water—the one physical (diffraction theory), which maintains that the colour can be considered "*als Farbe trüber Medien*"; the other chemical, which considers the colour as a special property. The investigations of v. Aufsess, made for a great part in lakes under different conditions, specially show that the latter view is the right one. It is simply and solely the solution of different substances which are carried down to the lakes in various ways which gives the water a colour differing from the pure blue. The substances which cause variations in the colour are chalk and organic humous materials. Large amounts of chalk give a green colour; large quantities of dissolved organic substances vary the colour through green over to yellow. The green lakes occur chiefly in chalk areas; the yellow and brown waters are found especially in the regions where large masses of decomposing plant materials occur. It is in the first instance the geological nature of the lake-basin and of the lake's drainage area which determines the colour of the lake-water. So far as one can judge simply from observations of the colour of lake-water and from some knowledge of the geological nature of the drainage area, I may say that all I have seen on my numerous journeys most distinctly indicates that v. Aufsess's view is right. According to Bourcart (1906, p. 108), inorganic salts, especially calcareous salts, have no colouring influence at all. Ferric salts also may produce a change of colour, especially in bog-water (Spring, 1897, p. 578).