

very slowly; the material deposited is mainly sand and clay with a slight admixture of organic material. Porsild (1902, p. 207¹) remarks that the bottom material was never finely pulverised mud, but generally large, well-preserved particles. The deposited *bottom* material was odourless, and thus probably destitute of bacteria, all processes of decomposition going on very slowly.

The *transparency* and *colour* of the water vary a good deal: in the clay-filled lakes the water is grey and the transparency very slight; in lakes not directly fed by rivers from the inland ice the water may be exceedingly clear and the transparency great (Vanhöffen, 1897, p. 169). With regard to the *chemical* composition of the lake-water we do not know anything, but we may advance as an hypothesis that whilst farther south the chemical nature of the lake-water, the quantity and quality of decomposed and suspended organic and inorganic constituents, are dependent upon the heterogeneous nature of the surrounding country of the lake territory and vary from lake to lake, this is hardly so much the case in the arctic zone, where the differences in the nature of the surrounding country are not so great; further, we may suppose that the lake-water will prove to be exceedingly poor in lime everywhere in the arctic regions.

Our knowledge of the *temperature* of the lakes is also very incomplete. We know only that the arctic lakes are open but few months of the year. Many of the lakes examined by Ekman (1904, p. 10) in Sarek were never quite free from ice. Three small lakes were covered with ice of a thickness of 2 m. even on the 27th July 1903, and are supposed to thaw only in very warm summers. The lakes examined by Greely on Grinnell Land at 82° N. lat. were free from ice only during one and a half months, from the middle of July to September. A great many high arctic lakes are thus no doubt of Forel's type of polar lakes, the surface temperature of which never exceeds 4° C. and the bottom temperature of which is $\bar{<}$ 4° C. They have always "inverse stratification," the water resting in layers almost throughout the year, the colder above the warmer; in summer they have a very short period of circulation (Forel, vol. ii. p. 303). So far as I know, the temperature of such lakes is only known from theoretical considerations. The only lake of whose temperature we have some knowledge, and, as far as I know, most like Forel's type of polar lakes, is the large deep Torne Träsk in Swedish Lapland. According to Ekman (1904, p. 8), it was still almost homothermous on the 25th July 1900, four weeks after it had thawed, with a temperature of 3.1° C. at the surface and 3.3° C. from 70 to 85 m. Even in July the lake had thus not yet attained the temperature of

¹ The full reference to the literature cited will be found in the bibliography at the end of the paper.