

what similar. This is never appreciably high, and the great variability which might be expected in lakes of which some are of the conspicuously tropical type, others, owing to the exceedingly long duration of the ice-covering, almost of the arctic type, is not met with. Neither Vierwaldstättersee (Amberg) nor the Lake of Zürich (Pfenninger) generally exceed 22° C. even in the warmest summer time, Lac Léman at most 23° C. Lakes under even almost arctic conditions may, on the other hand, have temperatures which, though of brief duration, are high (12 – 15° C.) (see Zschokke, Pitard, Monti). Even in lakes frozen during about 300 days in the year, the summer temperature still attains 6° and probably more. The reasons for the comparatively slight difference in summer temperature are principally that the affluents are to a pretty considerable extent derived from glaciers and thus everywhere carry very cold water, that the littoral zone, which in the Baltic lakes plays the great heating part, is of small extent in the alpine lakes, that the organic processes in these do not work with such an intensity as to raise the temperature, and finally, that many of the less highly situated lakes and those from which we have most information are very large lakes with great depths, while the high alpine lakes are small and comparatively shallow lakes. Zschokke maintains, as the result of the records of the temperature in lakes over 1500 m. above sea-level, that the summer temperature does not exceed the deep-lake temperature in the less highly situated, somewhat large lakes; still, I think that it might also be emphasised as a biological factor, that these high alpine lakes so often attain relatively high temperatures. Whether the latter temperature extends over short or long periods is of slight importance: the main point, according to my opinion, is that the temperature is reached. One thing is at any rate certain: all differ from the Baltic lakes in having a lower summer temperature (even in the larger of the latter lakes this is often about 24° C.); further, many of them have a much smaller range of temperature variation. In Lac Léman it is, for instance, only 4 – 22° C., in the high alpine lakes rarely over 0 – 12° , in the Baltic lakes 0 – 25° . Finally, it may be emphasised that the warming up and cooling in the various lakes, according as these approach the tropical or the arctic type, differ greatly, and that the length of the summer and the winter periods of stagnation respectively, as well as of the periods of circulation, must likewise vary much more in the lakes of this than of the other zones.

The water is on the whole remarkable for its great *transparency*; in the Lake of Geneva the white disc has been visible even at a depth of 21 m. in February, in July at a depth of only 4 m. (Delebecque, 1898a, p. 179). The mean for transparency in the Lake of Geneva is 10·2 m., in Vierwaldstättersee 9·4 m., in the Lake of Zürich 6·5 m., and