

The composition of the lake-water is also *chemically* influenced by the organic life. In summer, when the water is only to a very slight degree renewed and the evaporation is great owing to the high temperature, a further concentration takes place from the decomposition of the great quantity of organic material. The water, especially in the shallow lakes, thus almost assumes the appearance of soup, which is no doubt of the greatest importance in determining the maximum development of many Infusoria, Chlorophyceæ, Flagellata, and Myxophyceæ. The phytoplankton may play a principal part in the production of oxygen, probably to a less degree in lakes than in ponds (Knauthe, 1898, p. 785; 1899, p. 783). In bright sunshine the *Volvocinæ* and *Euglena* of the ponds can secrete such large quantities of oxygen under the influence of light that the water may contain up to 24 c.c. oxygen per litre. Corresponding quantities do not occur, indeed, in the lakes (9-12 c.c., Halbfass, 1901, p. 96). The quantity of oxygen does not, as a rule, attain in lakes the limit of saturation, or at any rate exceeds it but slightly (Halbfass, 1901, p. 96).

Within recent times the view has come more and more to the front that the reduction of the carbonic acid in lake-water, and therewith the deposition of lime, is in greater or less degree due to the activity of organisms. In fresh water these organisms are the green plants and molluscs. If the water at a given tension is saturated with calcium bicarbonate, then for every gram of carbonic acid which is taken by the plants during the assimilation processes from the water and used to build up organic materials, 2.3 gm. CaCO_3 are precipitated. The molluscs "absorb calcium bicarbonate, retain the monocarbonate, but the carbonic-acid-forming bicarbonate is liberated" (Krogh, 1904, p. 382).

Some authors are inclined to see in the action of the organisms the chief source of the reduction of the carbonic acid (Duparc for the lake d'Annecy, 1894, p. 199; Halbfass, 1901, p. 93, and Passarge, 1901, p. 144, for several North German lakes; and for the lower-lying alpine lakes, Bourcart, 1906, p. 118). A co-operating part in the reduction of the carbonic acid is ascribed to the organisms by Delebecque (1898a, p. 222; 1895, p. 790). Dr Krogh takes up a special position. He comes to the main result that the organisms "in the long run are altogether incapable of either adding to or diminishing the lime deposits in a lake" (p. 382). Krogh supposes, in fact, that nearly all the organic material of plants "is in due course again decomposed, whereby the carbonic acid is completely recovered"; for the molluscs, he maintains that the liberated carbonic acid "will increase the tension of the water, causing it to dissolve from the lime deposits of the bottom, from dead shells, and, indeed, from whatever source, exactly the quantity of lime which the living mussels have taken from it."