supply of gas in the upper, and very little in the lower, waters; frozen lakes are cut off from the atmosphere and are gradually depleted of oxygen until thawing sets in. In this connection wide seasonal variations may be expected. In the second place, the gases are much shuffled about by the organic life of the lake waters. Animals and most bacteria consume oxygen and produce carbon dioxide. A defect of oxygen therefore means a scanty fauna, and this may involve important economic consequences, *e.g.* when the bottom waters of a lake are unable to harbour fish which require coolness in summer. On the other hand, chlorophyll-bearing plants, which are, of course, restricted to the photic zone, consume carbon dioxide and give in return oxygen. Thus, at springtime the upper waters of lakes have frequently been found supersaturated with oxygen owing to the luxuriance of algæ; in pond-waters the abnormal content of 24 c.c. per litre has even been reported. Here again, then, seasonal variations are all-important. Nitrogen is little influenced by animal or plant life; but, in sea-water at any rate, some bacteria are known which assimilate nitrogen, and others which set it free as gas from nitrogen compounds.

These superficial considerations will suffice to show that the biological economy of lakes is intimately bound up with the dissolved gases, and it may be hoped that the study of these gases, experimental difficulties notwithstanding, will play a greater part in limnology than it has done heretofore.