

of reproduction are not equally common under all climates and in all localities. For the Ostracoda, Bryozoa, Planaria, Dinoflagellata, and possibly also Phyllopora I shall here not enter into more thorough details, but refer the reader to the following literature:—Ostracoda (S. Jensen, 1904, p. 21); Bryozoa (Wesenberg-Lund, 1896b, p. 350, and 1907, p. 71); Planaria (Zschokke, 1900, p. 86; Thinemann, 1906, p. 68; v. Hofsten, 1907, p. 4; Steinmann, 1906, pp. 199 and 213; and to valuable papers by Voigt); *Ceratium hirundinella* (Zederbauer). In certain latitudes and under certain conditions monogonic reproduction prevails; under others, digonic reproduction. This phenomenon, which, so far as I know, has hitherto not been sufficiently noticed in the animal kingdom, is exceedingly well known in plants. It is well known to all botanists that numerous plants under certain conditions and in certain latitudes only have vegetative reproduction, and that different conditions determine vegetative reproduction. It is just in the varying modes of reproduction and the ability the organisms possess of utilising mainly sometimes the one sometimes the other, that we must seek for one of the main causes of the quite phenomenal power of adaptation and the consequently wide geographical distribution of the plankton organisms (see Wesenberg-Lund, 1907, p. 70). It must be regarded as a well-known fact that the maxima of the plankton organisms seem to occur at certain fixed temperatures. If the temperature of the lake is too distant from these, the plankton organism concerned does not occur there (Cyanophyceæ rarely in high arctic lakes); if the right temperatures only prevail for a short time, the organism remains in resting-stages throughout the greater part of the year; where they prevail for a long time the resting-stage is but short. In arctic regions *Ceratium hirundinella* is only free and pelagic during a few weeks of the year; in the Baltic lakes, from April till October; in the North Italian lakes it is perennial. *Daphnella* does not occur in arctic lakes; it is a periodical form in the Baltic lakes, perennial in the Italian lakes; *Anabaena circinalis* is periodical in Danish lakes, perennial in the Swiss lakes. The duration of the resting-periods decreases towards the south, and in this we find an interesting parallel to the life of higher plants in different zones. We are thus able to show that the different use of the two modes of reproduction, the result of which is the different sort of eggs, germs, etc., is one of the chief means by which the plankton organisms are able to adapt themselves to the varying conditions in the different parts of the world.

**II. Variation.**—A second fact on which the cosmopolitanism of the plankton organisms depends is the extraordinary capability each species has of changing form. It is therefore necessary shortly to deal with our knowledge regarding the variation of the plankton