

forms. At a temperature of 12–14° or 14–16° C., which in the Baltic lake territory mainly occurs at the *end of May and beginning of June*, all seasonal variations are fully formed. Diatoms change their shape of colony, in *Ceratium hirundinella* the fourth horn is developed, or new, narrower, and longer seasonal forms are observed, the longitudinal axis in *Asplanchna* increases in certain localities, the series of variations in *Synchaeta* and *Anuraea* arise, the growth in the tip of the crest in *Daphnia* and *Hyalodaphnia* proceeds, the hump in *Bosmina coregoni* grows upwards and the first pair of antennae increase in length; *B. longirostris* as well as many others of the above-named forms decrease in size. At the same time the summer forms appear with their highly developed floating apparatus, viz., *Holopedium*, *Bythotrephes*, *Diaphanosoma*, *Leptodora*. By an abrupt change the whole plankton community has by form variations decreased its rate of sinking and augmented its floating capacity; the rate of sinking for the plankton of June is therefore much less than for the plankton of May.

Towards winter the species has again the external appearance which we are accustomed to regard as normal. Simultaneously the summer forms with their often highly bizarre appearance disappear.

What has happened in these three weeks, in which the whole plankton changes its form and augments its floating capacity? The investigations have now established the following facts.

The demands made by the variations in the outer conditions on the floating power of the species can *generally not be satisfied by the transformation of the single mature individuals*. In Diatoms it is probable that some species, on the rate of sinking increasing, occur in colonies instead of singly, or, if they are generally colony forms, they change the shape of colony through the use of gelatinous masses, which are different qualitatively as well as quantitatively (*Tabellelaria*); the individual itself remains, so far as is known, as a rule unchanged. With regard to the Cladocera and Rotifers it may be pointed out, that if the demands become too great, the individual may respond to them by migrating to deeper waters, the temperature of which agrees more with that under which the organisms were hatched and grew up; but doubtless the response most frequently is death. The demands made by the variations in outer conditions are mainly met by the species in such a manner that *the individuals before death produce new broods in which, when hatched, the demands are on essential points already satisfied*. Thus we also find that those individuals which have survived the winter in water layers with high bearing-power, and which are distinguished by relatively plump form, die out in spring. In the brood-pouches of the round-headed winter forms we find broods with pointed heads in the above-named three