

a very great extent, through the meshes; and, secondly, the meshes become gradually clogged with the slimy little algæ, or animals, so that the coefficient of filtration does not remain constant. Even during the course of a single haul we occasionally noticed that everything worked well to begin with, but that the cloth became more and more stopped up, until at last filtration ceased entirely. In other words, it is sometimes impossible to tell how much water has been filtered, and consequently the catch is practically valueless from a quantitative point of view.

Filtering
method.

Lohmann's
pump method.

An endeavour was made to overcome this last difficulty by filtering a quantity of water, previously measured, either through silk nets, or through an even less porous filter-material, such as taffeta, or hardened filter-paper, or sand, an additional advantage being that by this means the very smallest organisms could be retained. Water-samples were secured by water-bottles or by pumps. Lohmann, who did much to perfect the pump-method, was not only able to get his water-samples from any depth desired, but could obtain samples representing a column of water from the surface down to a specified level. The pump was made to work in connection with a long, flexible hose, the mouth of which was lowered as far down as considered necessary, and then drawn gradually up towards the surface as pumping proceeded. The pumped-up water thus represented proportionally the whole distance through which the hose passed before reaching the surface. These samples were afterwards filtered by Lohmann, and the results compared with catches obtained by vertical hauls with the silk nets.

Distribution of
pelagic plants
extremely
regular.

The methods of capture had thus been greatly improved, and it was possible to obtain the smallest organisms, but for practical reasons it was necessary to limit the quantity of water filtered on each occasion. This forced us to turn our attention to the second question, namely the regularity with which organisms are distributed in the sea. Fortunately, the researches of Hensen and his assistants, as well as those of Lohmann and myself, have all gone to show that the distribution of the pelagic plants, at any rate, is extremely regular. The samples from adjacent localities with similar life-conditions have yielded very concordant results. I do not consider it any exception to this statement that in tropical waters dense masses of *Trichodesmium* sometimes collect as water-bloom in certain areas and not in others, or that diatoms near the edge of the polar ice occur in more or less local swarms, for I consider it more than probable that these irregularities