

Hensen's work must not be disparaged because his aspirations have been more difficult to realise than he at first imagined. The difficulties are far from insurmountable, while Hensen himself will be always looked upon as one of the founders of the science of marine physiology.

In the biology of the sea we have also to consider the geographical distribution of the different species and their dependence upon ocean currents. The Swedish scientists, Cleve and Aurivillius, brought these two questions into special prominence, though no doubt they had been previously considered by others. But with the hydrographical investigations of Otto Pettersson and others the whole subject assumed a new aspect. Thanks to improved methods they succeeded in following the movements of the water-layers, by determining their salinity, temperature, and other hydrographical characteristics; and from this time forward the plankton was also enlisted as a supplemental means of characterising water-masses of different origin. Cleve with his marvellous power of distinguishing forms was able in a short space of time to determine numbers of species, animals as well as plants, and it is to him we owe the foundation of our knowledge regarding the distribution of plankton-algæ.

Aurivillius.

Pettersson.

International investigations.

Since the international marine investigations were commenced about ten years ago, researches have been carried out in the Northern Atlantic, North Sea, and Baltic; and specialists from the different countries of North Europe have gradually extended our knowledge, as far as northern species are concerned.

Lohmann.

Simultaneously great improvements have taken place in our methods of studying plankton. Lohmann has made it clear that the catches in the silk nets originally used incompletely represented the flora of the sea, owing to the fact that whole series of the most diminutive organisms slip through the meshes of even the finest straining-cloth. He devised methods for catching them by means of the filter and the centrifuge, and could thus estimate their numbers in a given quantity of sea-water. Coccolithophoridæ, which the "Challenger" Expedition claimed to have discovered, but which Hensen refused to recognise as self-existent plankton organisms, because he did not capture them himself, were now investigated, and Lohmann was able to declare confidently that they really are algæ, furnished with brown pigment granules, the physiological equivalent of chlorophyll, thus confirming the earlier discoveries of Sir John Murray, George Murray, Blackman, and Ostenfeld. Lohmann

G. Murray.
Blackman.
Ostenfeld.