The plankton around the British Isles

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From the distribution of certain planktonic forms around the British Isles, it is possible to recognize differences in the environment which are not readily detected by conventional hydrographic techniques. These so termed 'biological differences' in the environment appear to have a profound effect on the fluctuations in commercial fisheries.

The first evidence that this might be the case was found by workers at Plymouth when there was a sudden and drastic change in the planktonic fauna in the English Channel between 1930 and 1931. Sagitta elegans, a chaetognath which is to be found in areas where Atlantic and North Sea waters mix, was replaced in plankton catches taken off Plymouth by S. setosa, a typical North Sea form. It was assumed that there had been a weakening of Atlantic pressure at the mouth of the Channel and that the boundary between the two species of Sagitta had consequently shifted down the Channel to the west. From about the same time there started a progressive decline in the number of young demersal fish in the area and the average age of the herring in the commercial catches became higher until the local fishery collapsed. There was, too, a decrease in the phosphate content of the water during the winter which also could be attributed to a weakening of the flow into the western end of the Channel from the Atlantic, and it was suggested that this had led to poorer productivity of phytoplankton and so less food available for the young fish (Kemp, 1938; Russell, 1939).