divided matter is more abundant than in the warmest and saltest waters of the ocean. In this connection it may be observed that there is a relatively low salinity, as well as low temperature, in the Arctic, the Antarctic, and Southern Oceans; in the western Pacific and eastern Indian Oceans there is also a relatively low salinity, and in both these regions Radiolaria and Diatoms are especially abundant.

In the case of siliceous Sponges, which are rooted for the most part in the oozes and clays, the silica of their skeletons may be derived from the silica in solution in sea-water, or from the colloid silica set free during the decomposition of the felspathic rock fragments and minerals in the deposits.

We have frequently referred to the fact that the remains of Diatoms and Radiolarians cannot be detected in many of the calcareous oozes, although they live in abundance in the surface and subsurface waters of the region. It is most probable that they were at one time present in the deposit and have been removed in solution.[1] That both siliceous and calcareous organisms, when together in the organic oozes, are acted upon by sea-water, is shown by the following experiments:—A portion of mixed Diatom and Globigerina Oozes was placed in a litre of sea-water and some mussel flesh added, so as to obtain as nearly as possible the conditions attending decomposing organic matter on an ocean floor. After a week's exposure, during which time the organic matter had become putrid, the water was carefully filtered from the sediment, and the silicic acid determined in the filtrate. The amount found was equal to 0·025 grm. per litre, or, according to the amount of water, 1 part of silica had been dissolved from the Diatom Ooze in 41,000 parts of sea-water. This action of silicic acid in decomposing carbonate of lime was further proved by exposing 2 grms. of the mixed oozes to boiling water for half an hour, the amount of silicic acid present in a soluble condition after that period amounting to 0·014 grm., or 1 part in 80,000 of water. To check this result, and at the same time to determine whether the decomposing action of silicic acid upon carbonate of lime was continuous, the same sample of the mixed oozes was heated with successive quantities of sea-water, when it was found that each portion of water contained soluble silica.

f. Relative Frequency of Organic Remains in Deep-Sea Deposits.

Detailed statements have been given above of those stations at which the remains of vertebrates have been obtained in the dredgings and trawlings of the Challenger Expedition. The relative frequency of organic fragments observed during the examination of the small samples of the deposits from the sounding tube may now be noted. The frequency of occurrence is in the first instance given for the deep-sea deposits as a whole, and secondly, for the pelagic deposits as a whole. These numbers are solely

[1] See Murray and Irvine, *Proc. Roy. Soc. Edin.*, vol. xviii. p. 249.