

in the surface waters the living animals are as abundant over the Red clay areas, where not a trace of their shells can be detected in the deposits, as over the Pteropod ooze areas, where every one of them may be found.

At about 2500 fathoms the percentage of calcium carbonate in the deposits apparently falls off more rapidly than at other depths. In some areas, as, for example, in the North Pacific, calcareous shells are not found in 2500 fathoms, while in the North Atlantic they are at the same depth sufficiently numerous for the deposit to be called a *Globigerina* ooze. Where the living organisms are most numerous in the surface waters, the dead shells are to be found at greater depths on the ocean's floor than elsewhere. Where cold and warm currents intermingle, shelled organisms are killed in large numbers, and the dead shells may be found in deeper water than in neighbouring regions.

Evidences of movements of the ocean-floor.

Stratification in marine deposits.

It must be remembered that while we know the crust of the earth on the continental areas to the depth of several thousands of feet, our knowledge of the crust under the oceanic areas is limited to one or two feet. Only in a few exceptional instances can we say that the sounding-tube has penetrated more than eighteen inches or two feet into the deposit. Sometimes, when the sounding-tube brings up a section over a foot in length, there are distinct indications of stratification.¹ Even in great depths there may be a *Globigerina* ooze overlying a Red clay in the deeper part of the section. This arrangement may be explained by supposing that the calcareous shells have been slowly dissolved from the deeper layers, but this explanation will not suffice when a Red clay occupies the upper and a *Globigerina* ooze the deeper layer of the section. This latter arrangement appears to indicate that a large block of the earth's crust may have subsided to the extent of several hundreds of feet—from a depth at which a *Globigerina* ooze had been formed in normal circumstances to a depth at which a Red clay is laid down at the present time.

There are not many cases on record of one type of deposit being superposed upon another distinct type, examples being more numerous of differences in colour and in composition in the different layers of the same type of deposit. Thus, in Blue

¹ From his examination of the samples collected during the German South Polar Expedition on board the "Gauss," Philippi believed that stratification on the sea-floor of to-day is not the exception but the rule, and that, where it seems to be wanting, the upper layer is probably thicker than the depth to which the sounding-tube penetrated.