

were brown or chocolate coloured, due to the presence of manganese. A glance at Diagram 16 shows the relationship between the depth and percentage of carbonate of lime.

The surface fauna and flora was especially rich and abundant throughout. In the region of the Counter Equatorial Current, between the Equator and the Caroline Islands, pelagic Foraminifera and Mollusca were caught in great numbers in the surface-nets, surpassing in this respect anything previously observed. This fact is most probably in relation with another, which may be pointed out. In this region the soundings in 2325 and 2450 fathoms contained respectively 52 and 7 per cent. of carbonate of lime, whereas at 2300 fathoms, in lat.  $14^{\circ} 44' N.$ , only a few broken fragments of *Globigerina* shells could be detected on microscopic examination, and at 2450 fathoms, in lat.  $19^{\circ} 24' N.$ , there was not a trace of carbonate of lime shells in the ooze. This shows apparently that where there are numerous calcareous shells at the surface their remains may be found at greater depths at the bottom than where relatively less abundant at the surface. The pelagic Foraminifera appear to float about in great banks; one day immense numbers of *Pulvinulina* would be taken in the net, the next day *Pullenia* would be most abundant, and *Pulvinulina* nearly or quite absent from the hauls. The heavier shelled specimens were usually taken when the nets were dragged 100 or 150 fathoms beneath the surface. Between latitudes  $10^{\circ}$  and  $20^{\circ} N.$ , Oscillatoria were very numerous at the surface, and Diatoms, especially a large cylindrical *Ethmodiscus*, Castracane, were more abundant than in the tropical waters of the Atlantic far from land. The great abundance of Radiolaria and Diatoms is specially noteworthy.

*Off Japan.*—The soundings taken off the coast of Japan and in the Inland Sea (see Chart 35) proved to be Green and Blue Muds. Those in the Inland Sea, from depths of 8 to 15 fathoms, were Blue Muds containing from 4 to 11 per cent. of carbonate of lime, consisting of a few Foraminifera, fragments of Echinoderms, Molluscs, &c. There were, however, no pelagic Foraminifera shells, nor were any of these organisms found in the surface-net gatherings during the cruise in the Inland Sea. The bulk of these deposits was made up of mineral matter, 40 to 50 per cent. being composed of fragments over 0.05 mm. in diameter, while the great mass of the fine washings consisted of finer mineral particles. Many Diatoms were observed.

The deposits from 345 to 775 fathoms off the coast were Green Muds containing from a trace to 5 per cent. of carbonate of lime, of which pelagic Foraminifera formed a considerable proportion. Mineral particles over 0.05 mm. in diameter made up from 50 to 80 per cent., and consisted of felspars, magnetite, augite, hornblende, glauconite, quartz, volcanic glass, and pumice. In all these cases the mean diameter was about 0.20 mm., while green coloured casts of the Foraminifera remained after treating a portion of the deposits with dilute acid. The Green Muds from Stations 236 and 236A might equally well be designated Blue Muds, owing to the relatively small quantity of glauconite and the presence in some quantity of quartz fragments.