in the Green Sand from 100 and 150 fathoms. In the deep-water specimens there is an abundance of calcareous organic remains, especially Rhizopods, a diminution of mineral particles, and a great preponderance of phosphatic matter. The phosphate penetrates the shells in every part, and pseudomorphoses them in a more or less complete manner. It also forms large patches, enclosing organisms and minute mineral particles, which do not show structure, properly speaking; they are slightly brownish with transmitted light, and appear to occupy the place of the muddy calcareous matter usually found between the Foraminiferous shells in a Globigerina Ooze. These phosphatic patches are characterised by a certain opacity due to the inclusion of a crowd of infinitesimal heterogeneous particles. It might be said that the phosphatic matter, when infiltrating into the mud, had embraced and cemented all the immediately surrounding impurities. Although, as already stated, these patches present no structure, they are lined by a zone which resembles in character concretionary phosphate of lime (see Pl. XX. fig. 4). It might be suggested that the fundamental mass in solidifying had concentrated the organic and mineral matters of the deposit, and in so doing had left behind microscopical empty spaces, which had subsequently been filled by infiltrations of a more homogeneous phosphate of lime, and that this was deposited in these cavities in a manner resembling substances coating some geodes. These later additions of phosphate of lime, being of purer matter, more transparent, slightly yellowish, have solidified with the curvilinear contours and fibro-radiate structure of some concretionary coatings. Between crossed nicols the fundamental mass of these sections can be seen to remain without sensible action on polarised light, while the zone surrounding the borders reacts in giving a rather vivid tint. In the same way the external parts of the concretions offer in thin sections a border of transparent phosphate without inclusions, and with concretionary structure, as if the later depositions had been formed of a more homogeneous material (see Pl. XX. figs. 3 and 4). The same observation is applicable likewise to the infiltrations into the hollow spaces of the microscopic Foraminifera shells.

In these thin sections the Foraminifera that have been aggregated by the phosphate are sharply distinguished from it by the colourless calcareous matter of their shells. The interior formerly occupied by the sarcode is filled by a honey-coloured phosphate, the phosphate infiltrated by the foramina of the Rhizopods being much purer than that cementing the particles of the deposit; but this deposition of phosphate in the interior of the calcareous shells has sometimes been accompanied by brownish pigmentary matters, which are evidently hydrated oxide of iron associated with organic matters (see Pl. XX. fig. 2). The interiors of the Rhizopods in this way appear generally like yellowish, or in some cases like little black, masses limited by the calcareous envelope of the shell.

The infiltration of phosphate is not always limited to the filling up of the cavities of Foraminifera and other organisms; a pseudomorphic substitution of the