

central portions of the great ocean basins, while it is more or less characteristic of all the deposits now being laid down around continental shores.

With reference to its bathymetrical distribution, it appears to be most abundant about the lower limits of wave, tidal, and current action, or in other words, in the neighbourhood of what we have termed the mud-line surrounding continental shores. In the shallower depths beyond this line, that is to say, in depths of about 200 and 300 fathoms, the typical glauconitic grains are more abundant than in deeper water, but glauconitic casts may be met with in deposits in depths of over 2000 fathoms. No typical glauconitic sands have, so far as we know, been recorded in process of formation in the littoral or sub-littoral zones.

*Organic and Mineral Associations.*—From what has been said above as to the geographical and bathymetrical distribution of glauconite, it is at once evident that the mineral species associated with glauconite in marine deposits must be those which we have mentioned as more or less characteristic of terrigenous deposits, in contradistinction to those that are the chief mineral constituents of pelagic deposits. It is, further, associated with the minuter fragments of the rocks and minerals of continental land, for, as we have seen, its greatest development takes place just beyond the limit of wave and current action, or, in other words, where the fine muddy particles commence to make up a considerable portion of the deposits. It has, consequently, a restricted development in the shallow-water and littoral zones, where the coarser fragments prevail, and are continually subject to disintegration and transport by the mechanical forces of the sea. Glauconite is almost always accompanied by quartz, orthoclase often kaolinised, white mica, plagioclase, hornblende, magnetite, garnet, epidote, tourmaline, zircon, and fragments of ancient rocks, such as gneiss, mica-schists, chloritic rocks, granite, diabase, &c. In addition to these minerals there seems always to be associated with glauconite, in modern deposits, a considerable quantity of organic matter, often apparently of a vegetable nature. The glauconitic grains frequently contain traces of phosphate of lime, and make up a considerable part of some phosphatic nodules, so that phosphate of lime may be said to be one of its constant accompaniments. Volcanic rocks and minerals are, of course, frequently found in the same deposits as glauconite, for we have seen that they are universally distributed over the floor of the ocean; but as glauconite never occurs, or at least only exceptionally or doubtfully, in true Volcanic Muds and Sands, these minerals and rocks cannot be regarded as constant associates of glauconite.

From the fact that glauconite is almost always associated with Foraminifera and other calcareous organisms, and, indeed, originates in the hollow chambers and areolar spaces of these organic structures, these might be considered as essential to its occurrence, still it should be pointed out that there is not a trace of glauconite in many Coral Muds and Sands and in many Pteropod and Globigerina Oozes. When it is found in these calcareous deposits it is always possible to detect a considerable quantity of mineral