were originally associated. Such pure clays are, however, relatively rare in nature, and they do not occur as marine, or at all events deep-sea, deposits. The great majority of ordinary clays contain a large number of impurities, and especially is this the case with all those occurring in the deep-sea regions. These clays are fusible before the blowpipe. They are coloured brown, yellow, or red by the oxides of iron and manganese, and, as we shall see, these oxides may have been derived, as carbonates, from the same rocks as the clayey matter, but have subsequently been deposited in the clays on oxidation.

The clays of marine deposits may, from the point of view of their origin, be divided into two varieties: first, those in which the clayey matter has been chiefly transported by rivers from continental and other land surfaces, and second, those in which it has principally been formed *in situ* from the decomposition of rocks and minerals scattered over the bottom of the ocean. The former corresponds to the clayey matter in all terrigenous deposits in close proximity to the land, while the latter corresponds generally to the clayey matter in all truly pelagic deposits laid down towards the central regions of the great ocean basins, but as we shall presently show there cannot be such a strict separation between these two kinds of clay in the deep-sea deposits, for the clay transported from land surfaces may contribute in some measure to the formation of deposits far from coasts in the oceanic basins.

It has long been known that nearly all the fine clayey and other matters, transported by rivers into the ocean, fall to the bottom at no great distance from the coasts, owing to the action of the salts contained in the sea-water. They there form, along with mineral particles, the greater part of the detrital matters present in the terrigenous deposits of the shallow-water and deep-sea zones. The clay in the Blue and Green Muds and other terrigenous deposits near the coasts has thus been transported chiefly from the land or from the shallow-water and littoral zones. The minerals and rocks making up a part of these deposits may, it is true, yield clay by decomposition *in situ*, but the amount thus formed appears generally to be much less than that transported by the action of rivers, tides, waves, and currents.

Murray and Irvine have shown, by a series of experiments upon fine clay suspended in sea-water of different salinities and temperatures, that while the great bulk of the clay is precipitated in brackish water where the salinity only reaches between 1·005 and 1·010, still a small residuum is held in suspension even in water with a high salinity. They have also shown that temperature has a marked effect upon the amount held in suspension, as well as upon the rate with which it is thrown down. At a temperature between 40° and 50° F., and a salinity of 1·027, 0·0064 grm. per litre of clay remained in suspension at the end of 24 hours, while, under the same condition as to time, at a temperature of 80° F., only 0·0033 grm. remained in suspension. Again, at a temperature between 40° and 50° F., 0·0018 grm. remained in suspension at the end of 106 hours, and at a temperature of 80°, only 0·0003 grm. at the end of 120 hours. By