in Deep-Sea Deposits, though they are much more abundant in some of the red clay regions than in other deposits.[1] Dr Gibson has shown that the manganese nodules from these Red Clays contain a very large number of the rarer metals.[2]

Besides the constituents that have just been enumerated, which must be regarded as characteristic or essential components of a Red Clay, there are others to be noted that are accidental or exceptional. In the Atlantic off the western coasts of Northern Africa, it is well known that the Harmattan winds carry at certain seasons of the year large quantities of dust far out into the Atlantic Ocean, and in the Red Clays of this region these wind-borne particles make up a very appreciable portion of the deposit. In like manner the wind-borne particles from the desert regions of Australia can be traced in the red clay deposits to the west and south of that island continent.[3] There are many well-observed instances of volcanic ashes from subaerial eruptions having been carried immense distances by the winds before they fell upon the land or the ocean, and we find evidence of these in pelagic deposits. It is in every way probable that similar eruptions take place under water, and the ashes therefrom are in like manner widely distributed over the floor of the ocean.[4] We have some excellent examples of these showers of ashes, whether from submarine or subaerial sources, on the red clay areas. One of these is figured in Pl. IV. fig. 3, where the coarser particles have fallen on the Red Clay with manganese nodules, and these again have been covered with finer and finer layers of the same materials, the whole being solidified into a compact mass, which subsequently has undergone great alteration.[5]

Among the secondary products arising from the decomposition of the basic volcanic rock-fragments present in these deposits are zeolitic crystals resembling *phillipsite* in all essential particulars, these being especially abundant in some Red Clays from the South Pacific and Indian Oceans.[6]

Wherever the surface waters of the ocean are affected annually, or occasionally at long intervals, by floating ice, the icebergs bear a variety of mineral matters from the land of colder latitudes to great distances, and ultimately falling to the bottom they form part of the Red Clay and other deposits in great depths. These ice-borne fragments, consisting of quartz, felspar, green amphibole, epidote, zircon, tourmaline, &c., and fragments of ancient continental rocks, such as granite, mica-schist, &c., can be traced in the deposits of the Southern Ocean north of latitude 40° S., and in the Western North Atlantic they are widespread as far south as the latitude of the Azores.

In the great majority of the typical Red Clays the size of the mineral particles ranges from 0·1 to 0·85 mm. in diameter, and particles of this size do not as a rule make up more than 1 or 2 per cent. of the whole deposit. It occasionally happens that particles larger than 0·05 mm. in diameter do not make up as much as 1 per cent. of the deposit. On

[1] See Pl. XXIII.
[2] See Appendix II.
[3] See Pl. XXVIII. fig. 2.
[4] See Pl. XXVI. figs. 2–4; Pl. XXVII. figs. 2, 3.
[5] See also Pl. XXI. fig. 2.
[6] See Pl. XXII. figs. 1–4.