

the average found in a Red Clay. The excess of silica must, as in the other deposits, be attributed to the presence of siliceous organisms. The carbonate of lime is due, as in pelagic deposits, to the shells of calcareous organisms; the presence of carbonate of magnesia and sulphate and phosphate of lime is to be interpreted in the same manner as in the case of these substances in the pelagic deposits.¹ In the insoluble portion the excess of silica must be attributed to quartz, but besides there are present anhydrous silicates, which microscopic examination showed to be monoclinic and triclinic feldspars, mica, augite, magnetite, hornblende, and the debris of pumice.

An additional analysis of a sample of the Blue Mud from Station 323, in 1900 fathoms, gave the following results:—

Station.	Depth in Fathoms.	No.	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	Phosphoric and Sulphuric Acids.	CaO	MgO	K ₂ O	Na ₂ O	Loss on Ignition.	Total.
323	1900	65	59.54	19.42	7.15	traces.	1.68	1.98	1.35	2.68	6.24	99.99

If this analysis be compared with the preceding one from the same station, some differences will be perceived, the total amount of silica in analysis No. 64 being 64.20 per cent., and in No. 65, 59.54 per cent.; alumina, 13.55 per cent. and 19.42 per cent. Although the general result may lead in the two cases to the same interpretation as to the essential mineralogical composition of the deposit, these divergences show how much different samples of the deposit may vary even from the same dredging, and how difficult it is to pronounce upon the mineral nature of a deposit solely by chemical analysis. The variations in the composition of the deposit from the same trawling or dredging may arise from some portions being from deeper layers than others, or from differences of depth and position when the instrument was being dragged over several miles. The mode of collection and preservation, by separating the finer and coarser parts of the same sample, may also give rise to differences in the analyses. This remark may be applied to all the deposits, as already stated, but particularly to the terrigenous deposits which, according to the conditions of formation, are seldom so homogeneous as the pelagic deposits.

The Blue Muds surround nearly all coasts and fill nearly all enclosed seas, like the Mediterranean, and even the Arctic Ocean; of all the terrigenous deposits they occupy by far the largest area of the earth's surface, being estimated to cover about 14,500,000 square miles, of which the Arctic Ocean would contain about four millions of square miles, the Pacific three millions, the Atlantic two millions, the Indian one and a half millions, the Southern one and a half millions, and the Antarctic about two and a half millions of square miles. The geographical position of these muds is represented on Chart 1.

¹ See pp. 200, 201.