With reference to the percentage, often rather high, of phosphate of lime, it must be referred to the remains of organisms, such as teeth of fish, bones of Cetaceans, and sometimes to small concretions of phosphate of lime, which are met with in some of the deposits; we know from the analyses of clayey matters that phosphates are generally present in these substances. The phosphate of lime may also be due to the pseudomorphic interchange between carbonate of lime and soluble salts of phosphoric acid.

Manganese, which is one of the most constant elements in the Red Clay, is not shown in all the quantitative analyses, but the pyrognostic reactions show its presence everywhere, and it forms in these deposits, along with iron and earthy matters, the ill-defined variety known by the name of wad, and is associated with nickel, cobalt, and barium, and nearly all the rare metals, as shown by Dr. Gibson's analyses. We will return to this subject when dealing with the manganese nodules and their mode of formation.

Regarding now the insoluble part of the deposit, it will be seen that here too there is an excess of silica. It is not possible to explain this excess by the presence of the siliceous remains of organisms, for these do not resist the action of caustic potash. In certain cases the presence of quartz must be admitted, for the quantity of bases is not sufficiently high, but these grains of quartz do not belong normally to the Red Clay which is much more generally due to the decomposition of volcanic materials, in which quartz is relatively rare or absent. We have seen that special conditions, such as atmospheric currents and glacial phenomena, may serve to account for the presence of quartz in certain regions where Red Clays are in process of formation. The microscopic examination of the Red Clays has shown the presence in these deposits of orthoclase, plagioclase, and bisilicates, which contain variable proportions of lime, magnesia, alumina, iron, and manganese; these substances appear in the analyses as the insoluble portion, and must be in the form of anhydrous silicates. The percentage of the alkalies not having been determined, and the presence of volcanic glasses, render it impossible to estimate the relative abundance of the different minerals. The analyses, however, confirm what has been said as to the presence of silicates and silicated rocks in the sediments.

A second series of analyses, made according to the methods pointed out on pages 27 and 28, is tabulated here, the results of which, it will be seen on examination, approach those obtained from the preceding analyses.

Station.	Depth in Fathoms.	No.	SiO_2	CO_2	Al_2O_3	Fe_2O_3	FeO	MnO_2	CaO	MgO	K_2O	Na_2O	H_2O	Total.
9	3150	24	56·89	...	20·28	10·02	...	...*	1·31	2·56	1·91	0·81	6·72	100·50
29	2700	25	42·15	9·82	20·27	7·06	...	...	13·22	2·15	1·12	0·72	3·75	100·26
281	2385	26†	43·32	...	13·96	17·50	4·36	...	5·96	5·89	1·66	1·74	6·41	100·80
286	2335	27	39·10	1·50	15·40	17·93	...	5·75	8·37	2·37	1·27	1·40	8·89	101·98

* Traces of barium, manganese, and phosphoric acid.

† In No. 26 the finer parts had been washed away.