

				PORTION SOLUBLE IN HCL									PORTION INSOLUBLE IN HCL					
Station.	Depth.	No.	Loss.	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	MnO ₂	CaCO ₃	CaSO ₄	Ca ₂ P ₂ O ₇	MgCO ₃	Total.	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	CaO	MgO	Total.
265	2900	28	4.30	38.75	6.75	11.20	0.57	2.54	0.29	0.65	2.46	63.21	21.02	6.19	3.09	1.85	0.84	82.49
274	2750	29	7.41	46.50	8.82	14.24	3.23	3.89	0.41	1.39	1.50	79.48	9.52	2.20	0.75	0.89	1.25	13.11

No. 28 is of material obtained in the dredge, No. 29 as it came up in the trawl.

These analyses again show, from the totals of the soluble and insoluble portions and by the percentages of the various substances, a great variability in the deposit, depending upon the nature of the materials mixed up with the skeletons of the Radiolaria and other siliceous organisms. On comparing these analyses with those of the Red Clay, we find a much larger percentage of soluble silicic acid in this deposit than in the Red Clay, the deep-sea deposit with which it is most nearly analogous. In one of the above analyses the soluble silica rises to 46.50 per cent.; admitting that a part comes from the hydrated silicates forming the argillaceous matter, from the zeolitic crystals which are very abundant in this deposit, or from the action of the acid and potash on the anhydrous silicates, still a very large part of the silica in the soluble portion of the analysis must come from the skeletons of the Radiolarians, Diatoms, and Sponge spicules. In fact, the examination of these siliceous remains between crossed nicols show them to be composed of amorphous silica; their loss on ignition shows also that they contain water in variable proportions, like opal, some specimens of which lose on calcination from 3 to 9 per cent., and in some cases as much as 20 per cent. of their weight. This hydrated silica, more or less easily attackable by various chemical agents, is almost entirely removed by caustic potash.¹

The water shown in the analyses must also be regarded as being associated partly with the silica in the siliceous organisms, as well as in combination with the iron and alumina. The percentages of alumina and iron indicate that clay and limonite are present in considerable quantities. What has been said with reference to the analyses of the Red Clays applies also here to the manganese, carbonate, sulphate, and phosphate of lime, and carbonate of magnesia. The relatively small quantity of carbonate of calcium is explained by the great depth of the Radiolarian Oozes, for, as has already been pointed out, carbonate of lime gradually disappears from the deposits with increasing depth. The division referring to the insoluble part shows anew the presence of insoluble silica, of silicates, and of silicated rocks containing alumina, iron,

¹ For a description of the various Radiolarian spicules and their chemical composition, see Haeckel, "Report on the Radiolaria," Zool. Chall. Exp., part xl. pp. lxxviii *et seq.* See also Thoulet, "Sur les spicules siliceux d'éponges vivantes," *Comptes Rendus*, tom. xxviii. p. 1000, 1884, and the Challenger Reports on the Hexactinellida, Tetractinellida, and Monaxonida.