The soluble portion may be considered as formed of hydrated silica, argillaceous matters, ferruginous materials, and especially of carbonate of calcium derived from the debris of organisms, as in the case of the other deposits previously described. The result most clearly brought out from an examination of these analyses is that obtained from a consideration of the insoluble materials. Taking into account the percentages of the various bases, and remembering the silicates present in these Volcanic Muds, it is very easily seen that the insoluble silica must be combined with the alumina, ferric oxide, lime, magnesia, and alkalies, but as the alkalies have not been estimated, it is impossible to carry these deductions further. However, the analyses support the conclusions arrived at from the microscopic examination of these sediments, which shows the existence of a large quantity of silicates of recent volcanic origin, and that quartz, if present, plays but a very subordinate part.

The Volcanic Muds and Sands are found around all the oceanic volcanic islands and off those coasts where volcanic rocks occur; they are estimated to cover an area of about 750,000 square miles, in which is included the area of the islands themselves.

Coral Muds and Sands.

Just as around volcanic islands the deposits are principally made up of the debris from volcanic rocks, so off coral islands and coral reefs the deposits are chiefly made up of the fragments of organisms living in the shallow waters and on the reefs, such as calcareous Algæ, Corals, Molluscs, Polyzoa, Annelids, Echinoderms, and Foraminifera. These fragments form a coarse sand or gravel in the shallower waters, but beyond the limits of wave action there is a fine mud consisting principally of triturated particles of calcareous matter. With greater depth and increasing distance from the land, Pteropod and Heteropod shells, as well as pelagic Foraminifera, make up more and more of the deposit, till the Coral Muds and Sands pass finally into a Pteropod Ooze or Globigerina Ooze, in which reef fragments can with difficulty be recognised. The pelagic organisms are, then, with difficulty detected in the deposits close to the reefs, and reef fragments are rare in the deeper deposits at a considerable distance from the shallow water around coral reefs or islands. This transition in the character of the deposits from the reef-edge to the deeper water of the open sea, is illustrated in the figures on Plates XIII. and XIV., where the deposits at various depths around the island of Bermuda and off the Fiji and Friendly Islands are figured.

Coral Muds.—There are 16 Coral Muds described in the Tables of Chapter II., ranging in depth from 140 to 1820 fathoms, the average being 740 fathoms.

9	are	from	depths	under	500	fathoms.
1	„	„	of	500 to	1000	„
3	„	„	„	1000 „	1500	„
3	„	„	over	1500		„