principally of silica. When treated with alkaline carbonates, we have found that these casts contain silica, alumina, lime and magnesia; traces of alkalies were also detected. They are evidently composed of a substance differing completely from glauconite, and due to some special conditions in the immediate surroundings, for in this deposit there were none of the conditions which are usually present in glauconitic deposits as regards mineral and lithological associations and geographical position, the deposit at this station being a Globigerina Ooze containing 61 per cent. of carbonate of lime, a few Radiolarians and Diatoms, and a great abundance of volcanic debris.

IV. Phosphatic Concretions.

In the foregoing chapters of this work reference has frequently been made to the presence of phosphate of lime in marine deposits. The bones and teeth from the central parts of the Pacific, and the manganese nodules which have been formed around organic centres, frequently yield considerable quantities of phosphate of lime. In the Globigerina and other organic oozes, there is always a small quantity, usually less than 1 per cent., of phosphate of lime, while in the shallower water deposits around continental shores there is usually a much larger percentage of phosphates. When describing the glauconitic material of the Green Sands and Blue Muds, it was pointed out that this substance was frequently associated with phosphate of lime in the interior of the Foraminifera shells. We now propose to describe in detail certain phosphatic concretions found in marine deposits, especially in those deposits in more or less close proximity to continental shores, which present in many instances a most complete analogy with similar concretions in geological formations. In these descriptions we will deal especially with the nodules dredged at Station 141, 98 fathoms, Station 142, 150 fathoms, and Station 143, 1900 fathoms, for at these points the most typical examples were procured; the two former stations are situated on the outer edge of the Agulhas Bank, south of the Cape of Good Hope, and the last in the deep water nearly 100 miles south-east of the Bank.

Macroscopic Characters.—The concretions vary from 1 to 3 cm. in greatest diameter; exceptionally they may attain from 4 to 6 cm. in diameter. They are surmounted by protuberances, penetrated by more or less profound perforations, and have, on the whole, a capricious form, being sometimes mammillated, with rounded contours, and at other times angular. Their surface has generally a glazed appearance, and is usually covered by a thin dirty brown coating, a discolouration due to the oxides of iron and manganese. This coating, which covers all parts of the concretions, usually veils the mineralogical nature and aggregate structure. When they are regarded more closely, the irregularities of the surface are frequently observed to be due to heterogeneous fragments applied the one against the other, cemented by phosphatic