may be accounted for when we remember that the substance is not homogeneous, and is so fine in the grain that perfect separation is impossible even under the microscope. It may be added that, like other zeolites, these crystals are attacked by hydrochloric acid, leaving a siliceous skeleton.

*Geographical and Bathymetrical Distribution and Mineralogical Associations.*—We have seen that phillipsite is present in nearly all the deposits collected by the Challenger in her voyage through the Central Pacific, from the Sandwich Islands to near the island of Juan Fernandez. It has also been detected in some of the deep-sea clays collected by the U.S.S. "Tuscarora" in the Central Pacific, and in the deposits collected by H.M.S. "Egeria" in the Central Indian Ocean. It always occurs in the deeper deposits, as will be seen by reference to the Tables of Chapter II., most abundantly in Red Clays, more rarely in Radiolarian Oozes, and still more rarely in Globigerina Oozes.

By reference to what has been said as to the distribution of basic volcanic glasses and basaltic lapilli, it will be seen that the distribution of these substances coincides with the distribution of the crystals of phillipsite. If the sounding tube has not demonstrated that the basin of the Pacific is covered at many points by flows of lava, it is because this apparatus cannot, any more than the dredge, penetrate below the surface of the sediment, and these superficial layers are always formed, as might be expected, of fragmental matters. But granted the accumulation of lapilli and volcanic ashes and sand that are found there, everything points to the conclusion that, beneath the deposits of mud, the bottom is constituted over considerable areas by veritable volcanic flows. Whether this supposition be correct or not, it is incontestable that, at those points far removed from continental land, and situated beyond the influence of transport by rivers, waves, tides, and currents, the elements most widely spread in the oceanic sediments are of volcanic nature, or result from the decomposition of eruptive products. It may be pointed out also that the volcanic matters predominating among these products of submarine eruption and scattered over this region of the ocean are from their nature essentially alterable, being mostly basic glasses. The basic nature, and at the same time vitreous condition, of these fragments is a certain index of alterability and of the facility with which sea-water can attack and transform them. These points will be referred to presently, for they give the key to the mode of formation of zeolites in the deposits.

*Mode of Formation.*—If we consider, in the first place, the subaerial rocks where zeolites are located, it will be seen that they are of the same nature as the volcanic fragments dredged from pelagic sediments, and that the conditions under which the zeolites are formed in both cases are analogous. It is a well-established fact that zeolites are never met with in fresh and unaltered rocks, neither are they ever observed as direct products of crystallisation in a magma nor as products of sublimation. They are specially