X. FORMATION OF CHALK.

The formation of chalk from coral is known to be exemplified at only one spot among the reefs of the Pacific. The coral mud often looks as if it might be a fit material for its production; moreover, when simply dried, it has much the appearance of chalk, a fact pointed out by Lieutenant Nelson in his Memoir on the Bermudas (1834), and also by Mr. Darwin, and suggested to the author by the mud in the lagoon of Honden Island. Still this does not explain the origin of chalk; for, under all ordinary circumstances, this mud solidifies into compact limestone instead of chalk, a result which would naturally be expected. What condition then is necessary to vary the result, and set aside the ordinary process?

The only locality of chalk among the reefs of the Pacific, referred to above, was not found on any of the coral islands, but in the elevated reef of Oahu, near Honolulu, of which reef it forms a constituent part. It is twenty or thirty feet in extent, and eight or ten feet deep. The rock could not be distinguished from much of the chalk of England; it is equally fine and even in its texture, as earthy in its fracture, and so soft as to be used on the blackboard in the native schools. Some imbedded shells look precisely like chalk fossils. It contained, according to Professor Silliman, 92·80 per cent. of carbonate of lime, 2·38 of carbonate of magnesia, besides some alumina, oxide of iron, silica, &c.

The locality is situated on the shores, just above high-tide level, near the foot of Diamond Hill. This hill is an extinct tufa cone, nearly seven hundred feet in height, rising from the water's edge, and in its origin it must have been partly submarine. It is one of the lateral cones of eastern Oahu, and was thrown up at the time of an eruption through a fissure, the lavas of which appear at the base. There was some coral on the shores when the eruption took place, as is evident from imbedded fragments in the tufa; but the reef containing the chalk appeared to have been subsequent in formation, and